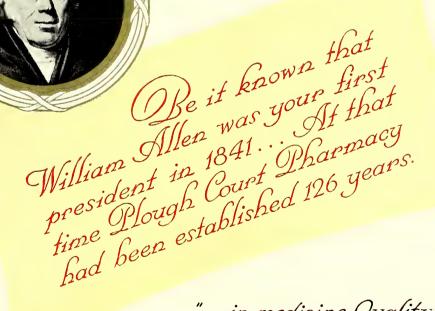
The

CHEMISTAND DRUGGIST

September 5, 1953

BRITISH
PHARMACEUTICAL CONFERENCE
NUMBER*





"— in medicine Quality is always our first objective"

RECKITT & COLMAN PRESENT A GREAT NEW PRODUCT

New, wonderful, fast-selling

NULON HAND CREAM

REGD.

Women need it

There are 20,000,000 women in the country and 13,000,000 of these already use something for their hands. What a market for hand care!



Nulon contains ingredients women know and believe in—lanoline, glycerine, and almond oil. It's quickly absorbed. Delightfully perfumed. Leaves no sticky feeling. Inexpensive.

Big profit earner

Generous margins, plus an extra launching bonus.

- Success proved
 - **a.** Out of 1,000 women sampled with Nulon, 556 sent full-price postal orders for more.
 - **b.** In towns already supplied for testing purposes Nulon is selling well and repeat orders are numerous. Nulon is an outstanding success!
- Nulon gets full publicity support

Advertising for Nulon in the coming year is the biggest for any hand cream. National launching: large spaces in leading newspapers. Intensive follow-up: colour pages, black-and-white pages and half-pages in women's magazines.

Attractively packed — ready for display

Nulon is attractively packed in one dozen display outers. "Test towns" prove counter display sells Nulon fast.



7 Displays make sales

Ask our traveller for the eye-catching counter and window display pieces. They're free!

Order now and make sure of your bonus.

RETAIL PRICE

1/7 & 2/6 DOUBLE SIZE

It is clearly evident from the latest marketing surveys that the public is increasingly concerned with value for money. There is, in addition, every indication that it is more conscious than ever before of the need for domestic and personal hygiene. Combine these two factors and you realise why more and more people are turning to Ibcol. For Ibcol is the all-purpose disinfectant-antiseptic that gives the widest protection at the lowest price.

Through extensive national advertising, millions of housewives have become aware that this is the germicide used in an ever-increasing number of hospitals and maternity homes. No wonder, then, that housewives place such complete trust in this most comprehensive of disinfectant-antiseptics; no wonder progressive chemists throughout the country find Ibcol so essential and so rewarding an item to stock and display.

Aspirin tolerance

Difficulties attending the administration of aspirin in large doses over prolonged periods are now largely overcome.

> Heavy aspirin dosage is possible without the development of gastric and systemic disturbances when the analgesic is given in the form of Solprin tablets, which provide calcium aspirin unassociated with decomposition products in palatable solution.

Both aspirin and calcium aspirin, as generally prepared, have chemical and physical disadvantages. Aspirin is acid and sparingly soluble: calcium aspirin is unstable and unpalatable.

'Solprin' overcomes the disadvantages – combining the advantages – of both. 'Solprin' is substantially neutral. It does not decompose during manufacture or storage. Like aspirin it is analgesic, sedative, antipyretic and anti-rheumatic: like pure calcium aspirin it is soluble and bland.

In all but cases of extreme hypersensitivity, extensive clinical trials with 'Solprin' show just such gratifying results as might be expected of so remarkable a combination of properties. Upon the importance of such results there is no need to insist.

SOLPRIN

Stable, soluble, palatable calcium aspirin

Solprin is not advertised to the public and is available only on prescription (U.K. and Northern Ireland only). Dispensing pack, price 7/6 (Purchase Tax Free) contains 300 tablets in foil.

RECKITT & COLMAN LTD., HULL AND LONDON (PHARMACEUTICAL DEPT., HULL)

Check your stocks of

THE MOST FAMOUS
THROAT PASTILLES
IN THE WORLD

EVANS THROAT PASTILLES

RETAIL 19 A TIN

WHOLESALE 12/3 A DOZEN (plus 25% P.T.)

Outers and showcards available



EVANS MEDICAL SUPPLIES LTD

Head Office and Workshops: SPEKE · LIVERPOOL 19
London Office and Workshops: RUISLIP · MIDDLESEX

Other establishments:

EVANS MEDICAL SUPPLIES (NORTHERN) LTD • Tower House, Tower Street, Newcastle upon Tyne I

EVANS MEDICAL (WALES) LTD • Mariner Street, Swansea

GLASGOW DISTRIBUTORS: The New Apothecaries Co. Ltd., 59 Glassford Street, Glasgow C.1

Overseas Establishments: Beine • Bombay • Calcutta • Dublin • Johannesburg • Karachi • Madras • Melbourne

Rio de Janeiro • Sao Paulo • Singapore • Sydney

CHLOROPHYLL

is to-day
the biggest best-seller!

We are the first to offer it in the most pleasant way

at a very popular price and with a large margin of profit

for you as

"PHYLL"

the CHLOROPHYLL CHEWING GUM (NOW FULLY SWEETENED)

If you are a wholesaler—please fill in and send us the attached coupon

If you are a retailer—please fill in and send us the coupon as well; we shall pass it to wholesalers distributing these lines.

To DEGREE MFG. CO. LTD. Southall Lane, Southall, Middx.

Send me — without any obligation on my side—FREE samples, prices and other details of "PHYLL," the Chlorophyll chewing gum.

I am a WHOLESALER / I am a RETAILER

Please delete words not applicable

NAME	•••••••••••••••••••••••••••••••••••••••	***************************************
ADDRE	ESS	



NOW—when customers require something to prevent colds, this shelf display card is the very thing to remind them of ESOBACTULIN.

DISPLAY NOW

Retail Price 7/103d. inc. P. Tax.

33\frac{1}{3}\% Discount plus Bonus 13 to the dozen.

Supplied through your usual Wholesaler.

SOUTHON LABORATORIES LTD.
84-88, UPPER RICHMOND ROAD, LONDON, S.W.15

Recommend to gour customers

Ralgex

ANALGESIC - RESOLVENT
COUNTER-IRRITANT

SOLID EMBROCATION

Handy, clean, practical and efficacious for RHEUMATIC and MUSCULAR PAINS NEURALGIA and HEADACHES BRONCHITIS, CATARRH and LARYNGITIS

Now advertised to the public in a wide range of Provincial Papers

PHARMAX LIMITED

Old Hill, Chislehurst, Kent



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THE EVERLASTING QUEST

The mark B.D.H. is inseparably associated with the supply of galenicals and dispensing chemicals of high quality. Yet the Company's greatest triumphs have been in research leading to the pioneer manufacture of a long list of medical products. To name but a few, there are vitamins and endocrine substances, 'Anahæmin' refined liver extract, 'Myanesin' preparations and 'Mycil' fungicidal preparations.

B.D.H. also make reagents and pure chemicals for specialised industrial use. In this field their products have become the dependable measuring tools of analysts and research workers in almost every industry.

B.D.H. research workers continue in their quest for new substances and for ways of improving those already known. Analysts and production teams strive to maintain purity and to produce economically. All combine to justify the phrase—'Preferably B.D.H.'

B.D.H. MEDICAL PRODUCTS

including vitamin products • Sex hormones 'Anahæmin' • Penicillin preparations insulin 'a.b.'

'MEPILIN' combined androgen-æstrogen
'MYANESIN' for neurological conditions
'MYCIL' fungicidal preparations
'ANCOLAN' antihistaminic

B.D.H. DISPENSING CHEMICALS

DRUGS · GALENICALS · PILLS · TABLETS
SOLUTIONS FOR INJECTION

B.D.H. LABORATORY CHEMICALS

including 'ANALAR' Reagents · 'M.A.R.' Microanalytical Reagents · Inorganic and Organic Chemicals · Materials for Microscopy · Amino Acids · Concentrated Volumetric Solutions

THE BRITISH DRUG HOUSES LTD LONDON N.1

ALSO B.D.H LABORATORY CHEMICALS GROUP, POOLE, DORSET Associated companies at SYDNEY TORONTO BOMBAY JOHANNESBURG AUCKLAND

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CHLORAMPHENICOL EYE DROPS



ROUSSEL

4 per 1,000 stabilised aqueous solution of chloramphenicol

READY FOR IMMEDIATE USE

Need not be prepared or diluted extemporaneously

The solution is stable for at least a year

HIGH CONCENTRATION of 4 mg. per cc. A concentration of 0.004 mg. per cc. is usually sufficient for inhibition of the micro-organisms pathogenic to the eye. The high concentration of 4 mg. per cc. leaves a wide therapeutic margin.

THOROUGH PENETRATION The cornea and conjunctive are duly penetrated and adequate intra-ocular concentrations can be reached by local instillation.

NON-IRRITANT and ISOTONIC TO TEARS Indicated in conjunctivitis, dacryocystitis, herpes ophthalmicus, trachoma, and to prevent infection in eye injuries or operations.

5 cc. bottles containing 20 mg. Chloramphenicol, with dropper.

ROUSSEL LABORATORIES LTD. 847 Harrow Road, London, N.W.10. LADbroke 360

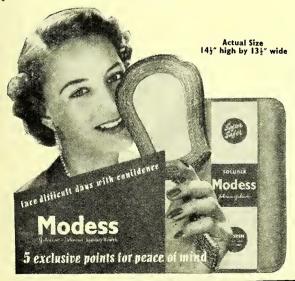
3 months' FREE supply of Modess for your shop!

4 SEPARATE CHANCES TO WIN IN Johnson's Modess selling competition

TAKE this great opportunity to win FREE a 3 months' supply of Modess, and boost your sales of Modess into the bargain.

Each month during the rest of this year the free 3 months' supply will be awarded to the shop whose sales of Modess exceeds the average for its type and size of outlet by the greatest percentage margin.

Your Modess counter assistant will be keen to help you win, because if you do, her prize will be a glamorous evening gown, specially made for her by a famous London fashion designer and a two days' luxury holiday in London, or if several assistants sell Modess in the winning shop, a generous cash prize will be divided between them.



As you know, Modess towels are far superior to any other because of their five special advantages. They sell easily and quickly, but to help you give sales that extra boost needed to win, we have designed two eye-taking full colour show-cards (below). The larger one is particularly attractive because it incorporates a beautifully decorated hand mirror & an actual packet of Modess. Stand them both in a really prominent position on your counter and watch sales bound up and up, putting you in the running for a prize.

Full details of the competition and the wonderful prizes in a broadsheet which has been sent to all retailers and wholesalers. Make sure that everyone in your shop sees it and make sure you have plenty of Modess in stock.

Johnson Johnson (GT. BRITAIN) LTD.

Personal Products Division, WREXHAM & LONDON



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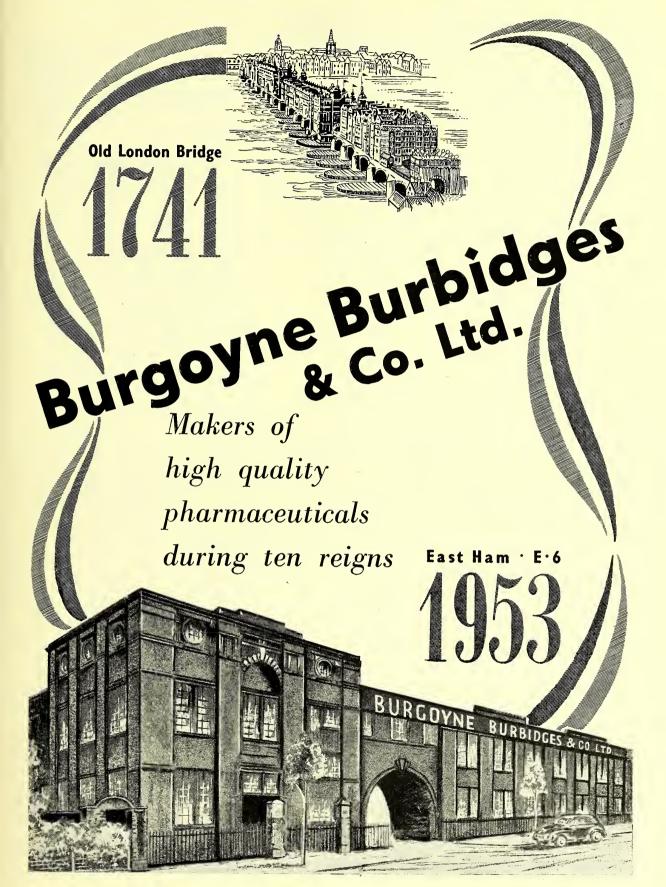
From the Carnegie Range of Fine Chemicals

SODIUM p-AMINOSALICYLATE
POWDER

CARNEGIE CHEMICALS (WELWYN) LTD

WELWYN GARDEN CITY: HERTFORDSHIRE: ENGLAND

Telegrams: CARNECHEM, WELWYN GARDEN
Telephone; WELWYN GARDEN 506 (4 lines)



Only D'Scholl's

FAMOUS AIR-PILLO

INSOLES

Offer ALL these Advantages

3 Times

Longer

Life

Extra Luxury Softness

up to
3 Times

More Profit

per pair than on any ordinary

insoles.

PURCHASE

IE CONTINUOUS

DR. SCHOLL'S

NATIONAL ADVERTISING

Everyone needs Dr. Scholl's AIR-PILLO Insoles—they're bought as soon as they're seen. Keep them on the counter. They give you greater profit on every pair—earn you extra goodwill—sell easily; sell quickly. Dr. Scholl's AIR-PILLO are backed by large-scale, continuous advertising, with the phrase that has girdled the earth: "Like Walking on Pillows." ORDER YOUR SUPPLIES NOW—display them prominently and reap the benefit in extra profit.



Grand Celebration Bonus Offer

OPEN FOR I WEEK ONLY

To celebrate the fifty millionth pair of Dr. Scholl's AIR-PILLO Insoles sold, an ALL-TIME RECORD BONUS is offered, which gives you 3 times more profit than on any ordinary insoles. ORDER AT ONCE. Write or 'phone now for details if you have not yet received them.

The Scholl Mfg. Co. Ltd., 182-204, St. John St., London, E.C.I. Tel. CLErkenwell 3636

MACLEANS announce

A NEW INDIGESTION TREATMENT WITH ALUMINIUM GLYCINATE



Macleans now introduce New Macleans Tablets with Aluminium Glycinate.

Aluminium Glycinate, produced in the Macleans laboratories, is the ideal dry form of Aluminium gel. It makes possible this tableted form of the new Aluminium "buffers" which may be sucked continuously in accordance with the latest medical opinions on indigestion therapy.

Until 15th Nov. — special bonus parcels!

Special bonus parcels are available until 15th November. These give you the opportunity of stocking up on this new product on highly advantageous terms—up to 74% margin on cost!

Bonus parcel "A"	Bonus Terms Per doz.	Cash Profit Per doz.
· ·		
2 doz. 1/3 roll packs	7/3	$5/4\frac{3}{4}$
1 doz. 3/6 carton pac	ks 20/3	$15/1\frac{1}{2}$
TOTAL PRO	OFIT ON PA	RCEL £1/5/11
Bonus parcel "B"		
2 doz. 3/6 carton pac	ks 20/3	$15/1\frac{1}{2}$
TOTAL PRO	OFIT ON PA	RCEL £1/10/3
Bonus parcel "C"		
4 doz. 1/3 roll packs	7/3	$5/4\frac{3}{4}$

TOTAL PROFIT ON PARCEL £1/1/7

The "buffering" efficiency of Aluminium Glycinate is superior to that which can be obtained from an equivalent weight of any other dry form of Aluminium gel.

In addition New Macleans Tablets contain a proportion of Macleans Carbonates to ensure rapid reduction of excess acid. These fortify the action of Aluminium Glycinate to give a rapid-acting tablet without risk of alkalosis or acid rebound.

You may therefore recommend New Macleans Tablets with confidence to both casual and chronic sufferers from acid indigestion.

To explain the action of Aluminium Glycinate to the layman, we are using the phrase "follow-through protection" in extensive press advertising.

Normal Trade Terms

	TWIST- WRAPPED	ROLL PACK
Retail Selling Prices	 3/6	1/3
Price per dozen	 42/-	15/-
Standard	 26/6	9/5
Intermediate	 25/1	8/11
Best	 24/3	8/8
Display	 23/7	8/5
Purchase Tax per dozen.	 $6/7\frac{1}{2}$	$2/4\frac{1}{4}$

Macleans Ltd., Manufacturing Chemists, Great West Road, Brentford, Middlesex. EALING 6616

A new and logical therapy for Rheumatic conditions



LLOYD-HAMOL LTD., 3 ST. JAMES'S SQUARE, LONDON, S.W.1. WHITEHALL 8654/5/6

M. W. HARDY (OVERSEAS) LTD

Pinners Hall Great Winchester St. London E.C.2

WORLD EXPORT AGENTS

for

PENICILLIN PREPARATIONS

MANUFACTURED BY



THE RANGE INCLUDES

LOZENGES · TABLETS · OINTMENTS · Etc.

Aids to Dispensing Outfits of Cream and Drops



Brook Parker & Coltal ASHFIELD, BRADFORD, YORKS.

MANUFACTURING CHEMISTS

Yorks. Telegrams Broparco, Bradford. Telephone 28237/8/9

13 QUEEN STREET, GLASGOW, C.1

Telephone CENTRAL 1918

BPB/A40



vill be told!

ecomes a Best Seller

Serocalcin has already made a big name for itself as a preparation specially suited to fight the common cold. Now an intensive publicity campaign in the National

Press is in operation again to create bigger turnover and profits to all Serocalcin stockists. The "cold" Season is starting — the public will be asking you about Serocalcin, so be sure you are fully stocked to

PRICE TO PUBLIC NOW 3/9d. and 9/10d.

meet demands.

SEROCALCIN TABLETS

ENWOOD LABORATORIES LIMITED

WITH YOUR NEXT ORDER

Bring your dressings business right up to date!



- BLUE printed cartons for cotton wool;
- GREEN for white lint;
- RED for boric lint;
- MAROON for gauze.

Certor

SURGICAL DRESSINGS in CARTONS

—the distinctive, modern packs for the pharmacy—and at little extra cost.

YOUR NEXT DRESSINGS ORDER—get Certor Surgical Dressings in cartons and bring your dressings business right up to date! These attractive, modern packs lend themselves to better displays, and better displays mean better business.

You can get the advantage of these new packs at very small additional cost.

All goods carriage paid in free packages

MACDONALD & SON LTD · · HOPE MILLS · POLLARD STREET

MANCHESTER 4

A "STANDARD"



"SURE SHIELD"

REGISTERED TRADE MARK

THREE
COLOUR
COUNTER
DISPLAY
OUTER

also in

1/-

Cartons

(moisture-proof heat sealed)

NEW
UP-TO-DATE
PACK!
ORIGINAL
COMPACT
SELF-SERVE

DISPENSER!

All in three colours

also in

1/9 Tins

Nationally advertised

OF "QUALITY"



For direct buying terms write to:

THOS. GUEST & CO. LTD.

CARRUTHERS STREET, MANCHESTER, 4

Needs to be developed fully!



One-third of the market already uses a denture cleaner...two-thirds await development

1 in 3 of the twenty million denture wearers already use a specific denture cleaner. But the other two-thirds still use makeshifts. Even kitchen scourers!

Research shows that when customers try Steradent they keep on buying it. Steradent's lively, new biggest-ever advertising is aimed at those remaining two-thirds!

So just show your customers that you stock Steradent and (if we may strain the metaphor beyond endurance!)...

Develop the other two with



Display cards of one doz. 18/- plus Purchase Tax. Retail Price 3/4½ each.



WHOLESALE ENQUIRIES TO:-

Alfred Franks & Bartlett Co. Ltd., 226/8, Grays Inn Rd., London, W.C.I · TERminus: 9865-8



SURGICAL BELTS CORSETS BRASSIERES

ELASTIC BAND TRUSSES . ATHLETIC SLIPS

STOCKINGS: Seamed · Seamless · Two-way Stretch

SUSPENSORY BANDAGES

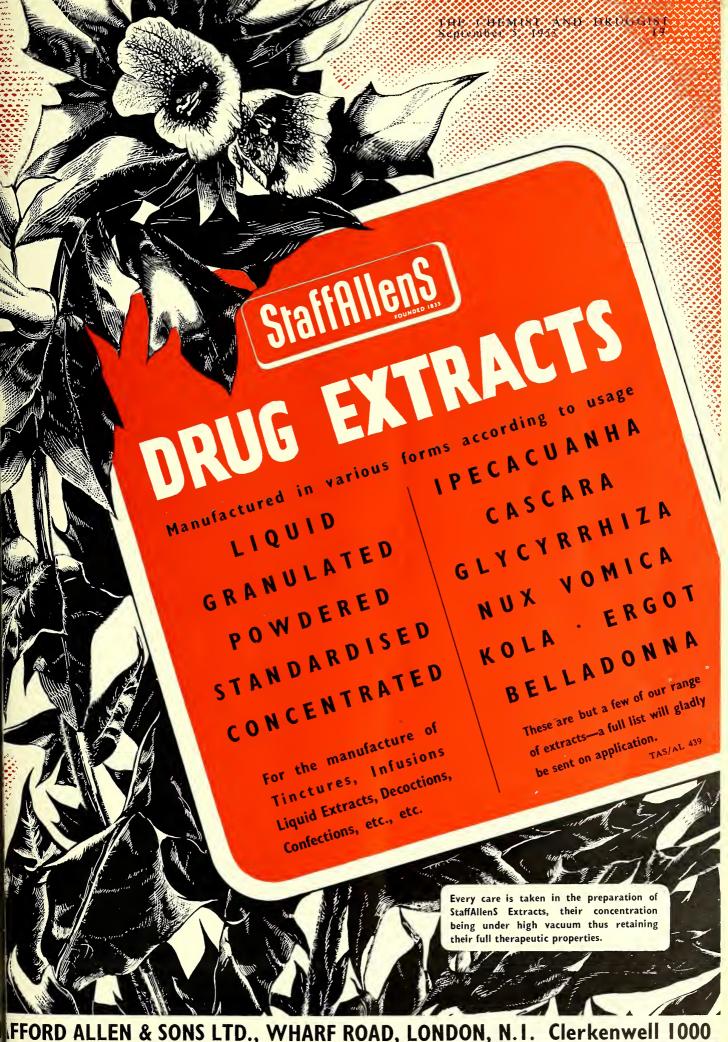


E. SALLIS LTD

VERNON WORKS · BASFORD · NOTTINGHAM

PHONE 77841/2

GRAMS. "EESINESS"



FFORD ALLEN & SONS LTD., WHARF ROAD, LONDON, N.I. Clerkenwell 1000



More-and more-and more you'll be asked for DAN DARE TOOTH POW-DER, the Calvert product with power pull! Kiddies and parents are intrigued by its novel appeal, not to mention its attractive FREE GIFT SCHEME. Here's a wealth of repeat business for you. Don't let your stocks get too low before re-ordering.

> "CALVERT'S FAMOUS TOOTH POWDER WITH THE NEW APPEAL TO CHILDREN

ADVERTISING. The most popular childrens' weeklies carry DAN DARE TOOTH POWDER advertising—" Eagle" (readership over 2,250,000) and "Girl" (readership over 1,250,000).



DISPLAY UNITS. You can have this compelling Display Unit and Show-card for counter or window. Show them



FREE PICTURE CARDS and FREE PICTURE CARDS and ALBUM. Exciting Space Picture cards given away in every pack and an Album is supplied for the return of a carton to the manufacturer. A big incentive for repeat husiness.



F. C. CALVERT & CO. LTD., MANCHESTER 11

In good supply.... ISONIAZID

(isoNICOTINYL HYDRAZIDE)

INCREASED PRODUCTION HAS BROUGHT LOWER PRICES, AND WE CAN NOW OFFER PROMPT DESPATCH OF ISONIAZID FROM PRE-PACKED STOCKS IN TINS OF I AND 5 KGM. — THE SIZES WHICH WE HAVE FOUND TO BE IN MOST REGULAR DEMAND

We invite your enquiry for any quantity



PHARMACEUTICAL CHEMICAL



MANUFACTURED BY

MAY & BAKER LTD · DAGENHAM · ENGLAND

Telephone ILFord 3060 Extension 220

Associated Houses

BOMBAY • LAGOS • MONTREAL • PORT ELIZABETH • SYDNEY • WELLINGTON

Branches and Agents throughout the World

PHA279



150 YEARS IN THE SPONGE TRADE

For the widest range of the finest sponges specify "RELIANCE" the brand name of all Cresswell's Sponges.

As the largest bulk buyers of Natural Sea Sponges, Cresswell's get the best when the sponge crop is fished.

Varied assortments of popular priced Reliance Honeycomb and Fine Turkey Sponges are now available in special partitioned display boxes. Each sponge is transparent wrapped for hygiene. Please write for price lists and details.

Your enquiries for sponges will receive our expert attention and a representative will gladly call on request.





(World Natural Sponge Suppliers Ltd.)

Largest Processors and Stockists of Natural Sea Sponges in the World INTERNATIONAL BUILDING, BUCK STREET, CAMDEN TOWN, LONDON, N.W.1 Telephone: GULliver 5462-3 Telegrams: Sponge, Norwest, London



Monsanto chemicals for the use of germicide manufacturers . . .

Whether you make disinfectant fluids and antiseptics for hospital, surgery and personal use, or the household types, Monsanto chemicals can help you.

The wide range of Monsanto germicidal chemicals is at your service. One of the best-known is D.C.M.X., certainly the most powerful bactericide of its type today. It has a high R.W. co-efficient, low cost per R.W.

unit, a high degree of purity and negligible odour.

Other products include: P.C.M.C.; P.C.M.X.; Cresantol*-15; Cresantol*-3. All are made to consistently high standards and can be delivered immediately.

Full information, including technical bulletins, can be obtained from Sales Division.

*(Registered Trade Mark)

MONSANTO CHEMICALS LIMITED

Victoria Station House, Victoria Street, London, S.W.1

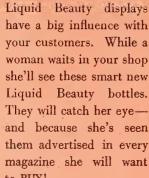


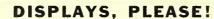
In assaciation with:

Mansanta Chemical Campany, St. Lauis, U.S.A. Monsanta Canada Ltd., Mantreal. Mansanta Chemicals (Australia)
Ltd., Melbaurne. Mansanta Chemicals of India Ltd., Bambay. Representatives in the warld's principal cities.



SEEING IS BUYING!

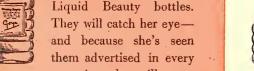




Displays are all-important when a new product is first marketed. That's why Goya hopes you will display Liquid Beauty in your windows, on your counters. Special display material that echoes the exceptionally heavy advertising is available please use it to good effect.



Liquid Beauty is a luxury cosmetic range at the very non-luxury price of only 5/-. The products are top-quality and the adver tising (you've seen the two girls?) is attractive and hard-selling. Back up with displays and you'l find that Liquid Beauty sales will bring in hand some PROFITS.



to BUY!







Best FORMULAE



Boric Oxide (B₂O₃) is the basis of Borax and Boric Acid, whose mild antiseptic, emulsifying and buffering properties make them ideal for many domestic purposes, as well as in the formulation of medical, pharmaceutical and toilet preparations. Our Technical Department will be glad to advise on the use of '20 Mule Team' products. Bulk supplies of '20 Mule Team' Borax and Boric Acid may be ordered through your usual wholesalers.

BORAX CONSOLIDATED, LIMITED REGIS HOUSE · KING WILLIAM STREET · LONDON EC4

Tele: Mincing Lane 7333



Wimzo cleans up!

Since Wimzo was reduced in price to bring the product within the pocket of practically every worker, increased sales have justified the move.

The larger sales hoped for are producing a turn-over profit all through the trade, from retailer to wholesaler to manufacturer; and Wimzo is now enjoying steady, regular sales. If you are not stocking Wimzo, ask your wholesaler for terms and sample stock.

WIMZO: the chlorophyll hand jelly. A gentle emollient which floats away the blackest and most tenacious grease, even ingrained dirt and that embedded in the finger nails. Just squeeze a small quantity of Wimzo in one hand and spread by a hand washing motion; rinse in water and the hands are left perfectly clean.



The NEW SELLING PRICE has made all the difference!



NOW 13

U.K. ONLY

Write for trade terms. If difficulty in obtaining supplies from your wholesaler, write direct (giving wholesaler's name) to WIMSOL LTD., KEIGHLEY, YORKSHIRE. Tel.: Keighley 4218

Scotland: J. Finlayson, Wimsol Ltd., 11 Torphichen Street, Edinburgh 3 Tel.: FOUntainbridge 7711 Bulk suppliers of . . .

DISINFECTANTS & ANTISEPTICS

- CARBOLIC FLUIDS
 Black and White types
 with Co-efficients 2 to 24
- APPROVED FLUIDS (Under the Diseases of Animals Acts)
- PINE FLUIDS
- AROMATIC FLUIDS
- LYSOL B.P.
- LIQUOR— CHLOROXYLENOLIS B.P.

Packed in 1, 5, 10 and 40 gallon drums

THE PRINCE REGENT TAR CO. LTD.

BRETTENHAM HOUSE, LANCASTER PLACE, STRAND, LONDON, W.C.2

Telephone: TEMPLE BAR 5801 (8 lines)

Also at :— PRINCE REGENT'S WHARF, SILVERTOWN, LONDON, E.16 Telephone: ALBERT DOCK 3311

RADIAN PRODUCTS for

the relief of muscular pain and the reduction of inflammation

- * RADIAN-B Aspirin Spirit Liniment. Brings the pain relieving properties of aspirin directly to the affected part.
- * RADIAN MASSAGE CREAM. The ideal working emollient for fibrositis, athletic injuries and for general use by masseurs and chiropodists.

News Angle!

Mr. A. E. James, masseur to THE AUSTRALIAN TEST TEAMS

since 1930, is using Radian-B and Radian
Massage Cream exclusively for the treatment of
bruises, strains and other muscular injuries to the
members of the Test Team
now touring England.

Radiol CHEMICALS LIMITED

78, UPPER RICHMOND ROAD, LONDON, S.W.15

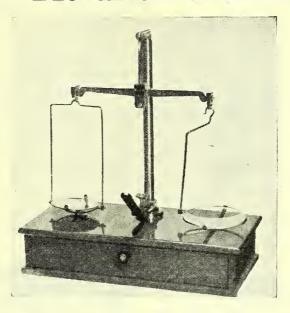
No. 88—DISPENSING BALANCE

Solid brass throughout, and mounted on solid mahogany box with drawer.

Sensitivity: \(\frac{1}{3}\) Grain

Length of Beam: 7"

Capacity: 2 oz.



PRICE— Lacquered Brass

£7 10 0

Chromium Plated £9 10 0

27 .0

(Weights extra)

No. 77—COUNTER SCALE (Agate Beam)

Solid brass beam and pillar, with concave brass goods pan. Mounted on polished mahogany base.

Sensitivity: 1½ Grains Length of Beam: 11" Capacity: 2 lb.



PRICE-

Lacquered Brass £9 10 0

Chromium Plated £11 15 0

(Weights extra)

Details of other sizes available on request.

Both models, guaranteed for 12 months, are fitted with hardened steel knives, cadmium plated to prevent rust, and comply with Weights and Measures regulations.

Britton Malcolm & Co. Ltd.

38-SOUTHWARK BRIDGE /: / ROAD-LONDON - S - E - I

WAT-4874/6

DEPENDABLE



15,000,000 WOMEN WILL SEE THIS ADVERTISING

Increased advertising in all the women's weekly and monthly publications is increasing the persistent demand for these Adelaide Grey Proprietarics. Order a stock today. APPROVED BY THE MEDICAL PROFESSION



WAX-A-WAY & COOLWAX

DEPILATORIES

'Laleek' Wax-a-Way recommended for facial treatment is definitely the most satisfactory Wax Depilatory marketed today. It now retails at 7/9 incl. Tax. 'Laleek' Coolwax is for use on the arms and legs. Economical to use and most effective. Retails at 5/2 incl. Tax. Both depilatories are harmless to the most sensitive skin.

LONGLASH & EYE COSMETIC

Adelaide Grey's 'Laleek' LONGLASH, famous for years as the leading line in the field, retails at 1/11. 'Laleek' Eye Cosmetic attractively packed in its new

Cosmetic attr round container complete with brush, retail 4/1 is rapidly growing in popularity.





lidelaide Gee

BEAUTY PREPARATIONS ADELAIDE GREY LTD., 30, OLD BOND ST., LONDON, W.I Tel. REG. 5825

YESTAMIN

NATIONAL ADVERTISING SELLS

"veast at its handiest"

NEW LARGE SPACE ADVERTISEMENTS

MOST COMPETITIVE PRICES

Meet and encourage the growing demand for dried brewers' yeast with YESTAMIN—"yeast at its handiest". Counter and window displays will amply repay you with increasing sales of this ethical and profitable product. Show YESTAMIN in your shop now!

50 Tablets Retail 1/3

Trade 10/6 per doz.

100 Tablets Retail 1/101

Trade 15/9 per doz.

300 Tablets Retail 4/9

Trade 40/- per doz.

ESTAM DAILY YEAST

THE ENGLISH GRAINS COMPANY LTD., BURTON-ON-TRENT







with

DEXTROSOL GLUCOSE

for instant energy

Delicately flavoured, 'Dextrosol' Glucose Tablets are a source of immediate energy—which gives them an immediate appeal to everyone!

for perfect purity

'Dextrosol' Glucose Tablets are perfectly pure. Moreover they contain over 98 per cent glucose (Dextrose Monohydrate).

for speedy sales

In test areas 'Dextrosol' Glucose Tablets have proved themselves to be really quick-selling. No sooner seen than sold! And remember—'Dextrosol' Tablets are an entirely

FOR EXTRA PROFIT

-On every 10½d packet of 'Dextrosol' Glucose Tablets you make

ORDER 'DEXTROSOL' GLUCOSE TABLETS NOW through your usual channels

DEXTROSOL GLUCOSE PRODUCTS

PROFIT

MADE BY THE PHARMACEUTICAL DIVISION OF BROWN & POLSON LTD. 125/130 STRAND, LONDON, W.C.2



Drugs, Galenicals, Packed Goods and Sundries for the Pharmaceutical Trade

Wholesale Distributors of Ethical Specialities and Proprietary Medicines
Regular van deliveries cover the West of England • Return of post service for urgent items

EVANS, GADD & CO., LTD., EXETER

Telephone: Exeter 2278 (3 lines)

Established 1790

Telegrams: Gadd, Exeter

"KWICKDRY"

HOUSEHOLD

CREPE PAPER TOWELS

IN PERFORATED ROLLS
FOR THE MODERN HOUSEWIFE

THEY SAVE WORK and DRUDGERY and ARE STRONGER WHEN WET.

They serve a multitude of purposes. Of a soft, pleasing, crepe texture "KWICK-DRY" TOWELS are very absorbent, can be squeezed like a cloth yet do not disintegrate.

FOR DRYING HANDS DRAINING FRIED FOOD CLEANING POTS & PANS, etc.

Wire Towel Holders supplied if required

This NEW habit is catching on! Are you cashing in? Samples and prices from the Paper Specialists:—

FREEDER BROTHERS PAPER MILLS

Telephone: HOWard 1847 (5 lines).

'Grams: Sylkocrepe, Enfield

Be sure of satisfaction

A real Lastonet surgical stocking is finer and cooler and does, of course, fit perfectly. It is also invisible under ordinary stockings and stretches equally in all directions to afford full, even support.

See you have a supply of Lastonet selfmeasurement forms.

the original elastic net stocking
ALWAYS MADE TO MEASURE

the stocking with six months' guarantee

LASTONET PRODUCTS LTD · CARN BREA · REDRUTH · CORNWALL

HEADLINERS FROM HALEX

FAMOUS HAND-FINISHED COMBS IN NEW COUNTER DISPENSERS

Halex hand-finished combs, always so popular with the public, come to you now in neat and bright new counterdispensers, each holding a dozen combs. With their unique bubble packs and wide range of attractive colours these combs are a salescertainty.

Stock up with Halex Dressing combs (1/6 each), Tail combs (1/3), Bag combs (1/3), and Pocket combs (1/-). Show these profitable lines on your counter, and see how they sell!



LIMITED, HIGHAMS PARK, LONDON, E.4.

SHOWROOMS: LONDON: 9 CONDUIT STREET, W.I.

MANCHESTER: 7 PALL MALL, MANCHESTER, 2.





The cold days mea warm ones for you hot-water bottle trade Be adequately stocke with swift sellin "Suba-Seal" bottle shortly to be advertise nationally in the Presbringing customers int YOUR shop.



Something they can trust

The public likes something reliable, something with dependable high quality. A faithful following is the public's response to trustworthy products that give real satisfaction.

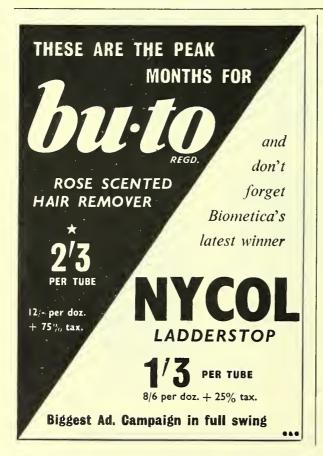
Such is the popularity of

CUTICURA SOAP CUTICURA OINTMENT CUTICURA TALCUM POWDER CUTICURA SHAVING STICK

There is a growing circle of discriminating people who appreciate high quality and insist on these soothing, protective, fragrant, mildly medicated Preparations, for care of the skin. Just display one each of these eye-catching firm family favourites in your attractive window, and make sure this steady all-the-year-round business comes your way.

CUTICURA SOAPS, OINTMENTS AND SHAVING STICKS HAVE ALWAYS CONTAINED CHLOROPHYLL

325



LIVER EXTRACTS Bulk, Vials or Ampoules

Actual Manufacturers specializing in crude liver extracts would welcome enquiries from the trade for large or small quantities of:—

- (a) Injectable liver extract, especially in strengths of 2, 5, 10 and 15 U.S.P. units per cc.
- (b) Oral extracts, concentrates etc., including the official preparations.
- (c) Extracts to special standards or requirements.

All the above made from FRESH LIVERS ONLY, in our factory at Roscrea, IRELAND.

For prompt attention and quotations, please write or telephone to :—

ANTIGEN LTD.

Manufacturers of Biological Products

5 Rampayne Street, LONDON, S.W.I

-- Telephone VICtoria 5555 -

NATIONAL ADVERTISING



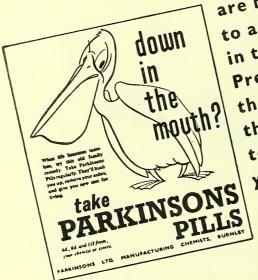
BEGAUSE Sparklon — the new and wonderfully improved nylon — is the perfect material for toothbrush tufts.

AND SALES PROVE the public, in ever increasing numbers, are realising it!



SPA BRUSHES LTD CHESHAM BUCKS

These eye-catching ads



are booked to appear in the Press throughout the country to help you



SELL PARKINSONS Bigger protits. PILLS More repeat sales!

LIMITED PARKINSONS

MANUFACTURING CHEMISTS · BURNLEY

MPORTERS and EXPORTERS of

PHARMACEUTICAL CHEMICALS. All types of Botanical and Crude Drugs for prompt delivery from stocks or shipment from origin . .

Established 1890

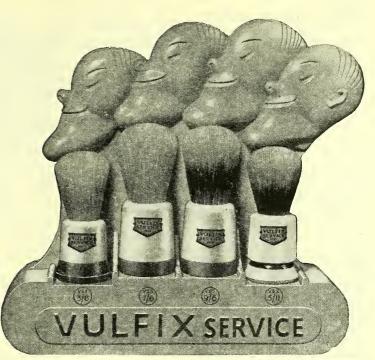
CHAS. H. WINDSCHUEGL LTD



Cable: WINDSCHUEGL LONDON

LEADENHALL STREET, LONDON.

An
eye-catching
selling
display
for . . .



VULFIX

SHAVING BRUSHES

This handsome display unit, in cream plastic, is supplied FREE with each parcel of ONE DOZEN brushes—

4 pcs. VSI retailing at 3/6 each

3 pcs. VS2 " " 5/11 "

3 pcs. VS3 " " 7/6 "

2 pcs. VS5 - ,, ,, 9/6 ,,

COST 42/- (plus 10/6 P.T.) RETURNS £3 13 3

EACH BRUSH CARRIES A 2-YEARS GUARANTEE

Backed by NATIONAL ADVERTISING

VULFIX Shaving Brushes are nationally advertised in Punch, Daily Express, Daily Mail, Daily Telegraph, News Chronicle, Daily Herald, Manchester Guardian, Yorkshire Post, Liverpool Daily Post, Birmingham Gazette, Daily Dispatch and Newcastle Journal.

CUT OUT THIS ORDER FORM AND POST IT TO YOUR WHOLESALER OR DIRECT TO US

To:—PROGRESS SHAVING BRUSH Co. Ltd., PROGRESS	WORKS. MOTTRAM STREET, STOCKPORT, Cheshire
Please supply through my wholesaler, Messrs	
VULFIX PARCELS with Show stand.	
Signed.	
Address.	





Extra profits are rolling in to Rexall Chemists throughout the United Kingdom as demand soars for the new Rexall Brewers' Yeast Tablets selling at 1/6 and 2/6 a bottle as a companion to the famous Rexall Puretest Yeast Flakes.

EFFECTIVE SHOWCARD

Effective showcard for counter or window and a striking modern pack plus remarkable value for money, clinch the sales appeal of this attractive line. (Incidentally, it is free of purchase tax.)

CONTRACTOR OF THE STATE OF THE



Enquiries from districts where there is no existing agency will be given every attention. Please write to:—

DRUG COMPANY LTD NOTTINGHAM



THE DIXOR RANGE VELOUTY **PRODUCTS**

perform a special task in the art of achieving complexion beauty, Velouty Powder Cream, Foundation Cream, Skin Food and Cleansing Cream, enjoy immense popularity and by displaying those excellent preparations you will take your share of this source of consistently good business.

setty FOUNDATION

TUBES ONLY TRADE 7/2 DOZ. RETAIL 1/4 EACH

TRADE 7/2 DOZ. RETAIL 1/4 EACH

couty CLEANSING

TRADE 7/2 DOZ. RETAIL 1/4 EACH

de DIYOR

The ORIGINAL combined POWDER CREAM

Tubes packed in attractive display outers of one dozen, and jars in display outers of half-

Shades: **IVORY** NATURAL PEACH **OCHRE** SUNGOLD

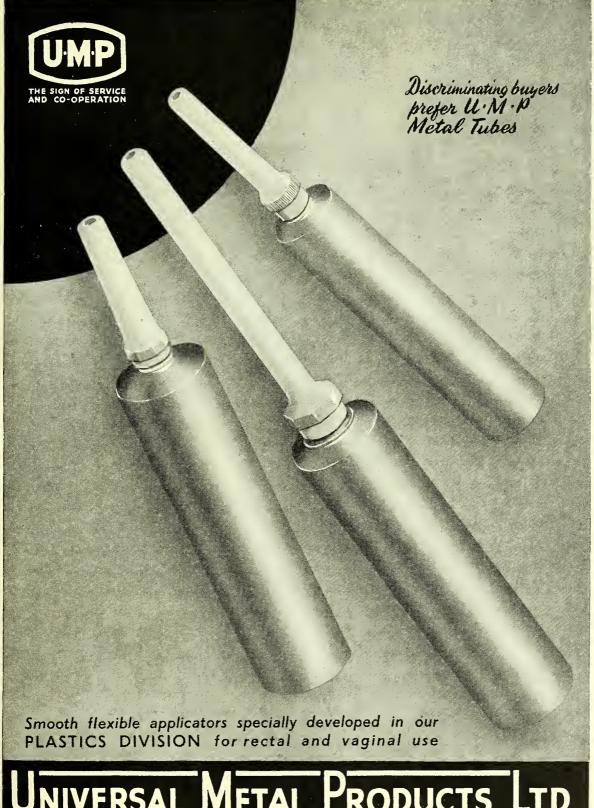


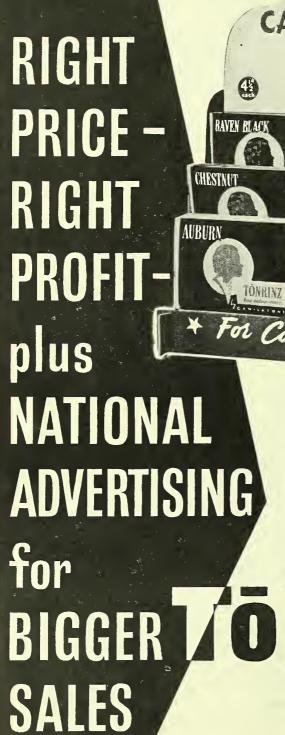


POTS TRADE 13/2 DOZ. RETAIL 2/6 EA.

No. 2 6/- DOZ. 9/6 DOZ. 1/2 EA. 1/10 EA.

ST. LEONARD'S WORKS, MORTLAKE, S.W. 14





CAMILATONE

TONRINZ

HONEY GOLD

BLUE Storthic

CHESTNUT

DARK BROWN

IN EIGHT

Lovely
SHADES

* For Colored - Lovely Hair

A CAMILATONE

TONRINZ

STORINZ

TONRINZ

The most popularly-priced Colour Rinse on the market! Retailing at only 4½d. (2/- a dozen plus 75% P.T.) it sells in the kind of quantities that mean big profits! Backed by intensive advertising in over twenty large-circulation Women's Magazines, there is a rising demand for Tonrinz. This is a selling proposition with an ever-growing market — keep Tonrinz on show.

CAMILATONE NRINZ

There's a range of eight lovely Tonrinz shades matching every hair colouring — and GOLDEN RINSE to brighten all shades of hair.

And don't forget TWIN PACK—the pack that contains a Tonrinz plus a Camilatone shampoo—in the same range of shades—and retails at 8½d. (3/9d. a dozen plus 75% P.T.)

CAMILATONE LIMITED, EDGWARE ROAD, WELSH HARP, N.W.9

Presenting

(PLEATED FILLING)

ATTRACTIVE FEATURES

- * Only as much as you need is pulled out at a time
 - * Package has tuck-in ends and can be re-sealed
- * Cotton wool kept clean throughout
- * Elegant design of pack appropriate for a lady's dressing table



Wholesale only—E. ILLINGWORTH & Co.

Telephone LOW MOOR 400/4 (Bradford) Ltd.

Telegrams ILLMOND, BRADFORD

ESTABLISHED ALMOST 100 YEARS

SURGICAL DRESSINGS

SPECIALISTS in the Manufacture of

PURE WHITE ABSORBENT GAUZES, AND BANDAGES

Hospital and B.P.C./N.H.I. Qualities
Plain and Sterilised



WOVEN BLEACHED AND PACKED IN OUR MODERN HYGIENIC FACTORIES

AT

DUDLEY AND BLACKBURN



SUPPLIERS TO GOVERNMENT DEPARTMENTS, HOSPITALS, WHOLESALERS, ETC.



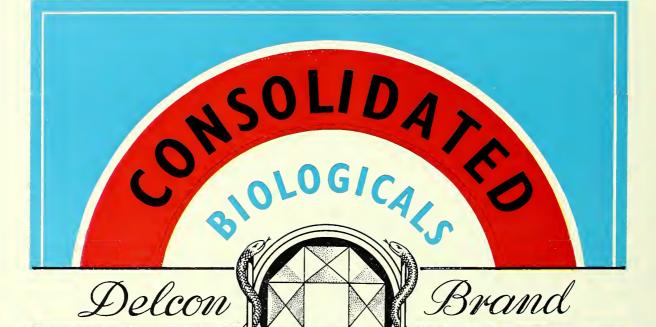


counter-irritation was recognised for its value in the treatment of Fibrositis, Lumbago and allied muscular complaints.

'ALGIPAN' BALM, the modern counter-irritant cream, actively penetrates the skin releasing its counter-irritant properties in the deeper tissues, where it increases the blood supply, raises local temperature and banishes the pain of muscular rheumatism. The warming glow which rapidly spreads over the skin at the site of application encourages and comforts the patient and demonstrates the swift and effective action of 'Algipan.'

Supplied in convenient 40 gramme collapsible tubes.





PECISTERED TRADE MARK

CALS

BILE SALTS and ACIDS
INTESTINAL GASTRIC
OX GALL SUBSTANCES
LUTEINIZING HORMONE
OESTROGENIC HORMONES
VITAMINS

ACTUAL MAKERS

Enquiries invited

CONSOLIDATED CHEMICALS Ltd.

THE TRADING ESTATE · WREXHAM · DENBIGHSHIRE

Telephone: Dutton Diffeth 231 Telegrams: Concem, Wrexham Cables: Concem, Wrexham



30 YEARS OF CHLOROPHYLL MANUFACTURE

Behind us is over a century's experience of fine drug manufacture, including 30 years of producing chlorophyll. Today we offer, in the highest concentrations available, grades of chlorophyll derivatives suitable for all purposes.

Our experience and research facilities are always at your disposal, and we shall be especially glad to advise you about the best grade for your particular use.

FOR TABLETS • DENTIFRICES • MOUTH WASHES • DEODORANTS • BREATH SWEETENERS

DRESSINGS • SOAP COLOURING • FOOD & CONFECTIONERY COLOURING, ETC. ETC.

WATER-SOLUBLE CHLOROPHYLLS • MEDICINAL CHLOROPHYLLS • OIL-SOLUBLE CHLOROPHYLLS

THE ALLEN CHLOROPHYLL COMPANY LTD.

WHARF ROAD, LONDON, N.I Telephone: CLErkenwell 1000 Telegrams: Alclor, Nordo, London Cables: Alclor, London



'CYCLORYL'

(REGISTERED TRADE MARK)

LAURYL **SULPHATES**

at very competitive prices, of superior quality and produced from the best Lauryl Alcohols.

LIQUIDS

CYCLORYL MA-neutralised with ammonia. CYCLORYL SA-neutralised with ethanolamine. CYCLORYL TA-neutralised with triethanolamine.

PASTES

with active matter ranging from 30 to 62%, light in colour with an extremely low content of electrolytes. Formulated pastes to customers requirements.

POWDERS

white in colour, spray-dried and free-flowing. Active matter from 40 to 90%. "CYCLORYL" 580 Powder corresponds to B.P. and U.S.P. specifications.

NEEDLES available in two qualities:

'Cycloryl 425 N.' with 37-40% Sodium Lauryl Sulphate, 'Cycloryl 585 N.' with 88-90% Sodium Lauryl Sulphate conforming to B.P. and U.S.P. specifications.

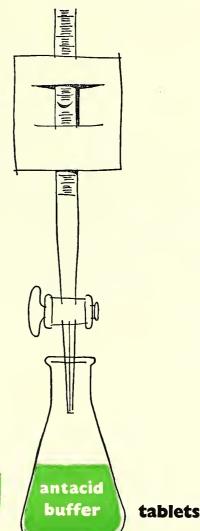
CYCLORYL' LAURYL SULPHATES

Fatty Alcohols of any type and quality
Lauryl Alcohol, Myristyl Alcohol, Cetyl Alcohol, Stearyl Alcohol, Oleyl Alcohol,
Cyclo Cetylstearyl B.P. and Cyclo Emulsifying Wax B.P. Sodium Lauryl Sulphate B.P.

Manfield House, 376 Strand, London, W.C.2. TEMple Bar 5993/6

a new way

to maintain acidity Within controlled limits



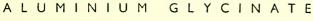
In the treatment of GASTRIC HYPERACIDITY and the control of PEPTIC ULCER,

this new product acts as an antacid buffer giving prompt action and prolonged effect within a definite and safe pH range.

Each tablet contains:

Aluminium glycinate

(Dihydroxy aluminium aminoacctate) ... 0.9 Gramme Magnesium carbonate 0.1 Gramme



- Gives prompt relief of pain.
- Has a prolonged and stable antacid action.
- Raises and keeps gastric pH in the 'safe zone' of 3.5 to 4.5.
- Facilitates healing of peptic ulcer.
- Is free from such side-effects as acid rebound and constipation
- Pleasant to take; convenient; economical.

PRODEXIN tablets, each in protective wrapping, are available in cartons of 30, retailing at 4/6d. plus 9d. P.T. and in dispensing packs of 240 at a trade price of 22/8 plus 5/8d. Purchase Tax.

Manufactured in the Laboratories of

C. L. BENCARD LTD PARK ROYAL, LONDON, N.W.10



NEW HORIZONS...



A field of clover used in the manufacture of Ransom's chlorophyll.

. . . in drug growing

THE cultivation of medicinal plants is a yeoman industry that has more than weathered the passing years. It has, in recent years, assumed undreamed-of dimensions, despite the increase in the use of synthetic drugs. To meet this expanding demand for vegetable drugs and galenicals Ransoms have acquired additional farmlands at St. Ives, Huntingdon, with which to augment the capacity of their well-known drug-growing fields at Hitchin. With their century of experience Ransoms now hold a position in the drug-growing industry which is second to none—the name Ransom having become synonymous with drugs and galenicals of unsurpassed quality the world over.

Actual growers of belladonna, henbane, foxglove, chamomile, peppermint and lavender.

ESTABLISHED 1846



WILLIAM RANSOM & SON LTD.

Hitchin Hertfordshire England

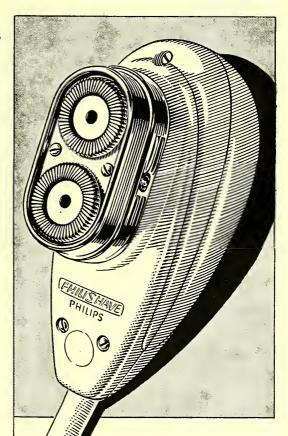
BIG INCREASE IN PHILISHAVE SALES!

Outstanding success of new BI-AX Shaving Head

ALL over the country there has been a steady rise in Philishave sales. The new model with the exclusive BI-AX Shaving Head has more than justified the claims we have made for it. Trade and public agree that it gives a much quicker, easier, cleaner shave than ever before, and demand is increasing all the time. Throughout the coming months 'Philishave' advertisements will appear regularly in the "Daily Express" and good quality men's magazines.

Remember these sales points:-

- 36,000 genuine shaving actions a minute.
- All hairs properly trapped.
- Easy to hold fits the shape of your hand.
- Gentle skin s-t-r-e-t-c-h-e-r so that hairs can be shaved closer.
- Easy to clean.
- Exceptionally quiet.



For AC/DC mains 110-130 and 200-250 volts or 120 volt dry battery of medium or heavy duty type. Plugs into lamp socket if desired. Retail price—complete with case or leather pouch—

£7.9.3 (TAX PAID)

PHILIPS New



PHAVE

DRY SHAVER

PHILIPS NEW PHILISHAVE DRY SHAVER WITH EXCLUSIVE BI-AX Shaving Head

If you are not already selling Philishave, and getting your share of the big demand, write to our Electrical Appliances Group, who will gladly arrange for a representative to call and give you selling details, etc.



COMPOSITION

ronchovydrin Papaverine Hydrochloride 1.2%w/v. Methyl Atropine Nitrate 0.16%w/v. Chlorbutol 0.14%w/v. Sodium Nitrate 0.07%w/v. Adrenalin 0.085%w/v. Amethocaine Hydrochloride 0.4%w/v. Pituitary Lobe Extract 1:400 8%w/v.

DR. WEIL'S ORIGINAL TREATMENT for ASTHMA

Pre-dominant among Inhalants prescribed by British Physicians before the war, Bronchovydrin was prepared solely in the Laboratories of Dr. Weil on the Continent. Arrangements have now been concluded for its manufacture also in England.

Full particulars of packings and prices gladly sent on application.

Sole Agents for the United Kingdom WILLIAM MARTINDALE

WHOLESALE LTD.

14-16 Bruton Place, New Bond Street London, W.I Tel: MAYfair 7811

Now even better value

for money!



Since the beginning of August, the size of this famous tissue has been increased. Spicers A1 was the first fully wrapped and sealed toilet roll to sell at

Now it's an even better seller. Be sure to tell customers about it.

TED TISSUE

SPICERS A1 Toilet Tissue

Also in flat packs

SPICERS LIMITED, UNION STREET, LONDON, S.E.I Telephone: Waterloo 5871

Perfectly

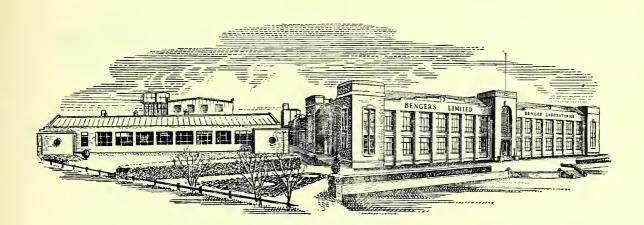
-Your SALES are assured if you stock SHADEINE!

Still the best hair tint. In all natural shades. Stocked by all wholesalers. Trade prices—1 oz. 18/- per doz., 2 oz. 29/7 per doz. Purchase Tax 75%. Retail Prices 3/11 and 5/2 per bottle respectively. Also the new GOLDEN SHADEINE for lightening mousey hair, 2 oz. 18/- per doz., Purchase Tax 75%. Retail Price 3/11 per bottle.



THE SHADEINE COMPANY

49 Churchfield Rd., Acton, London, W.3.



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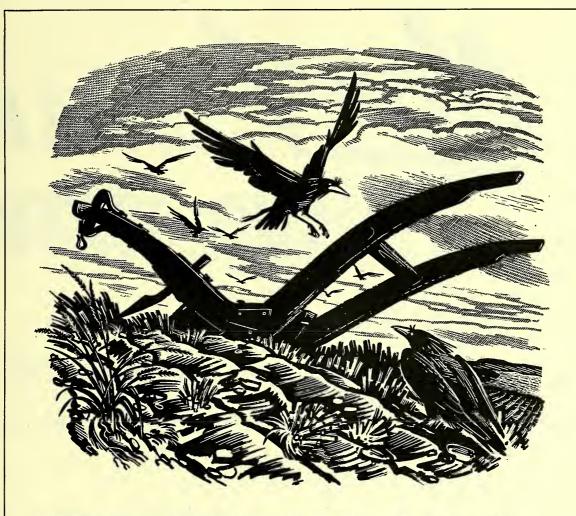
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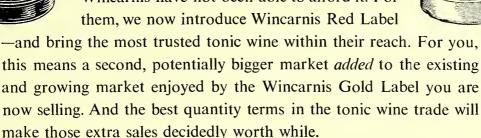
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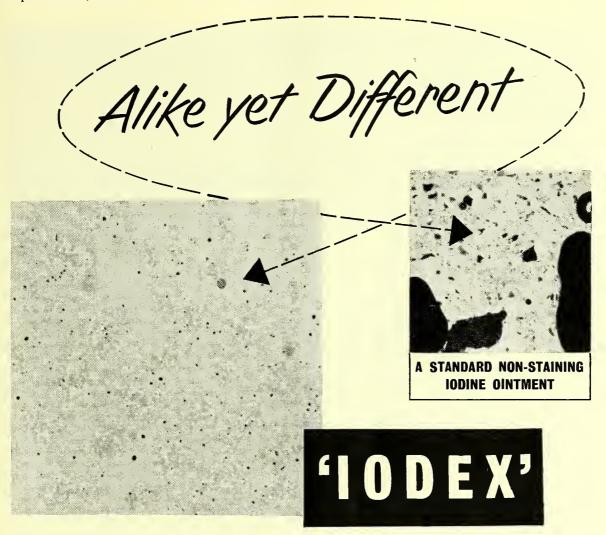
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Such superstitious rituals have long been abandoned. The parent of today entrusts her children's health to the family doctor and the welfare clinic—who, in turn, rely on scientific measures to combat and control disease. In this work of scientific medicine, as in the whole field of modern therapeutics, the fine pharmaceutical and serological products supplied by Burroughs Wellcome & Co. are playing a distinguished part. Prepared to uncompromising standards of excellence and issued only after keen clinical appraisal, these products are prescribed with confidence by doctors throughout the world.



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BRITISH PHARMACOPEIA 1953 Official from September 1, 1953

This new edition of the Pharmacopœia supersedes, as from September 1, the British Pharmacopœia 1948 as amended by the Addendum 1951. The book has been completely revised and more than 60 of the 750 monographs deal with substances and preparations new to the Pharmacopœia. There are 25 Appendices providing descriptions of chemical, physical and biological procedures, methods of sterilisation, and directions for the dispensing of parenteral injections.

NEW MONOGRAPHS

The monographs new to the British Pharmacopæia 1953 include-

Capsules of Chloramphenicol Capsules of Halibut-Liver Oil

Cream of Zine Oxide

Application of Benzyl Benzoate Eye Ointment of Sulphacetamide

> Injection of Globin Zinc Insulin Ointment of Zinc Oxide and Castor Oil

Paste of Zinc Oxide and Salicylic Acid

Sulphate Tablets of Penicillin

Tablets of Cascara Sagrada Tablets of Quinalbarbitone Tablets of Ergometrine Maleate

Sodium

ALTERATIONS IN COMPOSITION

The monographs on substances and preparations which differ significantly in composition or strength from those described in the British Pharmacopæia 1948 include ;-

Calamine Lotion

Cream of Penicillin

Dilute Ointment of Mercuric Nitrate

Dilute Ointment of Mercury

Eye Ointment of Penicillin Flexible Collodion Injection of Penicillin Liquid Extract of Colchicum

Ointment of Ammoniated

Ointment of Boric Acid

Ointment of Oleated Mercury

Ointment of Sulphur

Ointment of Zinc Oxide

Paraffin Ointment Simple Ointment

Strong Ointment of Mercuric

Tablets of Exsiccated Ferrous

Nitrate

Tincture of Colchicum

ALTERATIONS IN INSTRUCTIONS ON DOSAGE

Alterations have been made in the instructions for the dose to be dispensed or supplied when the name only of the following preparations is stated without directions as to dosage:—

Eye Ointment of Atropine

Eye Ointment of Atropine with Mercuric Oxide Eye Ointment of Hyoscine

Eve Ointment of Penicillin Injection of Insulin

Injection of Penicillin Injection of Progesterone Lamellæ of Atropine

Tablets of Ascorbie Acid

Tablets of Dienœstrol

Tablets of Ethisterone

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Tablets of Propylthiouracil

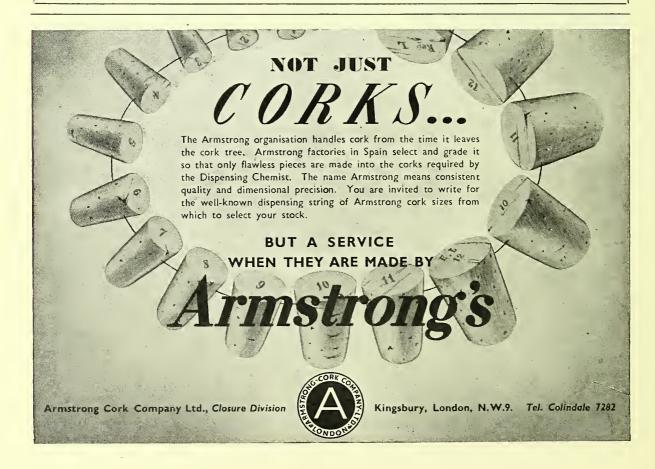
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Volume 160

Overseas News

September 5, 1953

No. 3837

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Volume 160

SEPTEMBER 5, 1953

No. 3837

Protein from Bacteria

POTENTIAL FEEDING-STUFF SOURCE

EXPERIMENTS recently carried out in the laboratories of the Evans Biological Institute, Runcorn, have pointed to the possibilities of using heat-killed cultures of *Bacterium coli* as a food supplement.

The results of the experiments were announced by Mr. R. S. Roberts (head of the Institute's veterinary department) in the *Veterinary Record*, August 29. Full results are expected to be published within the next few months.

Briefly, Mr. Roberts has shown that an inexpensive form of protein (named by him coliform protein) can be produced by growing Bacterium coli in a simple culture medium. Experiments on rats, chicks and pigs showed that the coliform protein produced a significant increase in growth without any harmful effects being noticed.

CHEMICAL PLANT **Exhibition at Olympia**

first post-war chemical plant exhibition now in progress at Olympia forms a section of the Nineteenth Engineering, Marine and Welding Engineering, Marine and Welding Exhibition, and is sponsored by the British Chemical Plant Manufacturers' Association. The exhibitors cover a broad chemical engineering field and include complete process-plant designers and contractors; makers of plant for performing unit operations; specialist fabricators of plant in a wide range of materials of construction; and suppliers of ancillary equipment such as instruments, valves, pumps,

such as instruments, valves, pumps, packings and jointings.

Developments in filter presses are shown by three firms exhibiting stainless steel and moulded rubber presses for handling corrosive liquids and presses in stainless, plastic and glass not only for corrosion-resistance but for use when conditions of especial cleanliness are necessary. A number of exhibits are concerned with process plant heating including a heating unit plant heating, including a heating unit for chemical process pilot plant re-quiring reaction temperatures up to 650° F. The manner in which the use of glass has increased is demonstrated by a glass climbing film evaporator and a series of glass fractionating column sections of different sizes illustrating the effects of liquid and vapour loading on the flooding of column packing. Visitors to the exhibition can inspect a fully automatic vial capping plant which applies 2,000—10,000 aluminium caps per hour. Additional interest is afforded by a chemical engineering conference during the exhibition. Papers are being read each afternoon, September 7-11, covering a wide field of chemical engineering activities. Open from 10 a.m. to 8 p.m. daily, the Exhibition closes on September 17.

WORK OF W.H.O. Director-general in London

AT a press conference in London on Al a press conference in London on August 26 Dr. M. G. Candan (directorgeneral, World Health Organisation) briefly reviewed the work of W.H.O. He said that W.H.O. was helping Haiti, Indonesia, Thailand and other countries to operate anti-yaws programmes. Penicillin had made mass treatment of yaws possible. One dose of 600 000 yaws possible. One dose of 600,000 units of penicillin was sufficient to prevent the disease. In Mysore State, India, a W.H.O. assisted programme against bubonic plague had terminated an epidemic of the disease at a cost of only thirty for the disease. only thirty-five American cents per

head of population. The British Minister of Health (Mr. Iain Macleod) said that Britain's contribution to W.H.O.'s work was 11 per cent. of a total of $\$8\frac{1}{2}$ millions.

EZSEP1953

POISONS LAW List and Rules amended

THE following Statutory Instruments

THE following Statutory Instruments give effect, from September 1, to the Poisons Board's recent recommendations to the Home Secretary (see C. & D., July 18, p. 49):—

Poisons List Order, 1953 (S.I., 1953, No. 1300, price 4d.); and Poisons Rules, 1953 (S.I., 1953, No. 1301, price 3d.). Copies of the Statutory Instruments are available from H.M. Stationery Office tionery Office.

B.P. 1953 Official amendments

THE General Medical Council have approved the following corrections to the British Pharmacopæia, 1953:

Page 61, line 9 (from foot) for 1000 read 5000, line 8 (from foot) for 2·0 read 5; page 62, line 10 (from foot) for 0·5 read 5; page 78, line 5 for 122° read 123°; page 110, after line 3 insert Pyrogens. Complies with the test for Pyrogens described upder American Pyrogens described under Amorphous Penicillin, page 397, injecting a quantity



CONFERENCE WINDOW DISPLAYS: Conference week visitors to London who took the opportunity to call at the Vere Street pharmacy of Allen & Hanburys, Ltd., were able to see a series of displays under the general title "Pillars of Pharmaceutical History." One of the displays is here illustrated. The subjects of the others included "Throughout Ten Reigns"; "238 years" (of Plough Court Pharmacy); "William Allen, 1770-1843."

containing the equivalent of not less than 0.2 g. of Calcium Gluconate per kg. of the rabbit's weight; page 131, lines 20 to 23 (from foot) delete It consists . . . and water, line 19 (from foot) for 81.5 read 95.0, line 14 (from foot) delete 10 parts of; page 132, line 6 for 2.5 read 5.0, line 7 for 15.0 read 5.0; page 139, line 10 for one-fifth read one-quarter; page 174, line 1 (from foot) delete and not more than; page 175, line 1 delete 96:5 per cent.; page 316, line 1 (from foot) for 250 read 200; page 334, line 17 for 1 read 0.2; page 354, line 8 (from foot) for Dilute read To, line 7 (from foot) after Sulphate insert, add 5 ml. of N/1 hydrophlovia grid diluter page 384, line 20 thoric acid, dilute; page 384, line 20 (from foot) for 30.0 read 29.5; page 432, lines 14 to 17 delete the test for Water-soluble extractive; page 445, line water-soluble extractive; page 443, line 12 for 0.1 read 1.0; page 451, line 13 for 1 read 0.5, line 14 after water, insert: previously warmed to about 80°; page 543, line 6 for five read two; page 555, after line 8 insert: The requirements for Uniformity of Weight of Tablete do not early to tablets which Tablets do not apply to tablets which have been sugar-coated; page 565, line (from foot) after distillation insert: Thymol, 0.01 per cent. w/v, may be added as preservative; page 567, line 15 for 29° read 31°; page 611, line 14 (from foot) for Oxidum read Oxidi; page 643, line 3 (from foot) for 0.04 read 0.004; page 706, line 15 (from foot) for two read twenty-four; page foot) for two read twenty-four; page 710, line 33 for 100 read 110; page 794, line 12 (from foot) for 1.5 read 15.0.

The corrections and the Pharmacopœia became official on September 1.

EDUCATIONAL GRANTS Pharmaceutical Society's List

THE Council of the Pharmaceutical Society has issued the following list of grants it has made during 1953 to institutions in recognition or encouragement of services to pharmaceutical education or research:—

£2,000 to the School of Pharmacy of London (the second annually for the the five years 1952-57).

fl,000 to the University of Manchester, to be used at the discretion of the professor of pharmacy towards the development of the department.

£1,000 to the Heriot-Watt College, Edinburgh, to be applied for the benefit of the School of Pharmacy in the College.

The following grants have been made in response to applications from institutions or individuals:—

£1,500 to Chelsea Polytechnic towards the conversion and equipment of a room for use as an advanced pharmaceutical chemistry (organic) laboratory.

£300 per annum for two years to Mr. William Anderson, B.Sc., Ph.C., Royal Technical College, Glasgow. Mr. Anderson is engaging in research on pyrogens at the department of pharmacy at the Royal Technical College.

£300 to Mr. Francis Maurice Clark, B.Pharm., Ph.C., Huddersfield, to assist him in undertaking full-time studies in pharmacy at an American University.

£300 per annum for two years to Mr. Seymour Jeffrey Corne, B.Pharm., Ph.C., Cardiff. Mr. Corne will be engaged at the Welsh National School of

Medicine upon an investigation of the action of British Anti-Lewisite on enzyme systems in vitro and in vivo.

£300 to Mr. John Norman Tracey Gilbert, B.Pharm., Westcliff-on-Sea, Essex, a student-associate of the Society, for research in the School of Pharmacy, University of London, on obtaining chemical analogues of the adrenal cortex hormones.

£300 to Mr. Douglas William Russell, B.Pharm., Ph.C., Sutton, Surrey, for research in the School of Pharmacy of the University of London on the relationship between chemical structure and physiological activity.

£300 to Mr. Alan Roy Timms, B.Pharm., Birmingham, 17, a student-associate of the Society, to enable him to develop his general knowledge of physiology and pharmacology so as to undertake research in that subject.

Further grants have been made by the Council for the purchase of specific apparatus for use in research, to remain the property of the Society, as follows:—

£412 for a Monroe CAA-10-3S calculating machine for use by Mr. E. R. Matthews in the department of pharmacy at Portsmouth Municipal College.

An amount up to £200 for a recording polarograph for use by Dr. R. C. Kaye in the department of pharmacy at Bradford Technical College.

An amount up to £200 for an incubator, hot-air oven and torsion balance for use by Dr. W. G. Smith in the department of pharmacy at Bradford Technical College.

"SALE OR RETURN" Warning on Tax Liability

THE Commissioners of Customs and Excise draw attention to a current misapprehension as to the effect of certain forms of contract in deferring the time at which liability to purchase tax is incurred. Tax liability cannot be deferred beyond the date of delivery of the goods to the retailer unless the retailer has an absolute right to return the goods at any time up to an agreed time limit (if any). They advise any trader, before entering into a "sale-or-return" or similar contract, to consult the local Customs and Excise officer.

LOCAL NEWS

"No Waiting" in London Streets

THE "no waiting" scheme designed to ease congestion in London streets is being extended to further streets, or parts of streets, on September 8. The whole of Chancery Lane is being restricted from 9 a.m. to 6.30 p.m. on Mondays to Fridays, and the "no waiting" restrictions apply in Bury Place, Holborn; Vauxhall Bridge Road, Basil Street, Chelsea and Kensington; and in a further length of High Street, Kensington. They also apply to Bishop's Bridge Road, Harrow Road, South Wharf Road and Westbourne Grove, Paddington, and Upper St. Martin's Lane. A short length of Charing Cross Road is being derestricted. Local areas in which "no waiting" is introduced for the first time include Barnes (one street), Bexley (four), Coulsdon and Purley (three), Feltham (one), Hayes and Harlington (three), Stoke Newing-

ton (three), and Walthamstow (three). Additional streets are made subject to the Order in Barnet, Bermondsey, Camberwell, Croydon, Deptford, Edmonton, Hackney, Hammersmith, Hampstead, Harrow, Hornsey, Ilford, Lewisham, Richmond, Southgate. Southwark, Tottenham, Uxbridge, Wandsworth, Willesden and Yiewsley and West Drayton. Copies of the regulations, entitled the London Traffic (Miscellaneous Provisions) (Amendment) Regulations, 1953; the London Traffic (Miscellaneous Provisions) (Amendment) (No. 2) Regulations, 1953, and the City of London Traffic (Miscellaneous Provisions) (Amendment) Regulations, 1953, are obtainable from H.M. Stationery Office.

A Doctor's Mail

AT a recent meeting of the Shropshire Executive Council the chairman (Mr. Frank Weston) reported that a doctor had forwarded to the Council a 3-lb, package containing mail received, in less than one month, from proprietary medicine manufacturers. The package contained three booklets—totalling ninety-eight pages; eight blotters; sixteen postcards for samples; and seventy-three folders. The number of preparations advertised was 122 and only in seven cases was the price given.

NEWS IN BRIEF

Photographic Equipment Stolen. — An intruder who broke into the pharmacy of Boots, Ltd., Queen Street, Oxford, stole £300 worth of photographic materials and £4 from a till.

Factory Burnt Out.—The five-story factory of Jewsbury & Brown, Ltd., mineral water manufacturers, Ardwick Green, Manchester, was gutted by fire recently. The company commenced in 1826 as a chemist's shop in the neighbourhood. The fire was described as the most serious one in Manchester since the 1939-45 war.

Higher Duty on Metal Capsules?—The Board of Trade state that they are considering an application for an increased protective duty on capsules containing more than 75 per cent, by weight of lead, of a description commonly used on bottles, jars, cans, and similar containers. Any representations which interested parties may wish to make about that application should be addressed to the Board of Trade, Industries and Manufacturers Department, Division 1, Horse Guards Avenue, Whitehall, London, S.W.1, not later than September 12.

SPORT

Golf.—London Chemists' Golfing Society at North Middlesex golf club, Whetstone, on August 27. Medal competition: captain's prize (division 1), R. Poole (9), 69 net; (division 2), A. H. Calcutt (20), 68 net—after a tie, Leading scorers; R. Collings (22), 68 net; H. R. Dawson (17), 69 net; W. A. C. Attwood (14), 70 net; W. E. Swanston (22), 72 net, Bogey competition for Leichner cup: W. A. C. Attwood (14) returned winning card of 2 down.

Manchester and District Pharmaceutical Golffing Society, at Sale, on August 26, Fourball Stableford competition for the Robinson's prize won by R. Demaine and Dr. Frazer with a score of 47 points,

OVERSEAS NEWS

WEST INDIES

Indigenous Botanicals

A PAPER on "Some Local Herbs" given on August 13 to the Pharmaceutical Society of Trinidad and Tobago, Inc., by one of its members, (Mr. Joseph Alexander Assing), drew highly appreciative comment. It dealt chiefly with the application of indigenous herbs, some little known, in the treat-ment of diseases and disorders of marked incidence in the tropics. parations suitable for use in coughs and colds; soporifics, antipyretics, and refrigerants; sedatives, carminatives, somnifacients, and hypnotics were dealt with under those headings. Mr. Assing became a senior dispenser to the Government of Trinidad and Tobago at the age of nineteen, but for some years has operated as a commercial pharma-

West Indian Druggists Confer

ALL over the West Indies plans are being finalised for a conference of West Indian druggists to be held in Bridgetown, Barbados, September 28 to October 3. Items on the tentative agenda for the conference include the formation of a West Indian Druggists' Association; unification of training throughout the area; the establishment of a faculty of pharmacy at the University College of the West Indies, Jamaica; and ethics. The Pharmaceutical Society of Trinidad and Tobago was founded in 1899.

BRUNEI

Expansion of Medical Services

AT a meeting of the State Council in Brunei, North-west Borneo, on July 29, the Sultan-in-Council approved a five-year development plan under which the medical services are to be expanded and a new Government hospital will be built at Kuala Belait. New travelling dispensaries (by road and water) will be provided to take medical services to remote areas. Anti-malarial work is being extended and intensified.

Forthcoming Congresses in Brazil

THE many congresses to be held at Sao Paulo during the 1954 Centenary celebrations include the Second Pan-American Congress of Veterinary Veterinary American Congress of Veterinary Medicine and the Tenth International Congress of Medicinal Plants. The latter will be held in December 1954 under the auspices of the botany and pharmacy departments of the Sao Paulo University and the Commission for the Study of Brazilian Medicinal and Toxic Plants.

SWITZERLAND

W.H.O. Progress with drug names

AT the twelfth session Executive Board of the World Health Organisation held in Geneva re-cently, the procedure for selection of non-proprietary names for drugs was reviewed and guiding principles were clarified. The Board decided to hold its thirteenth session in the Palais des Nations, Geneva, commencing on January 12, 1954.

TOPICAL REFLECTIONS

By Xrayser

Merchandise Marks Act, 1953

Your summary of the Merchandise Marks Act, 1953 (p. 207), an Act consolidating and revising the corresponding Acts of 1887-1938, is welcome. Though it is sixty-six years since the first Act of the series was passed, I doubt whether even now the pharmaceutical industry and its customers fully realise the searching effect of the Acts embodied in this year's enactment. We may describe it as the partner—the predominant partner, to quote a once familiar phrase—of the Sale of Food and Drugs Act. In 1891 the provisions of the Act of 1887 were extended by giving the Board of Trade power to institute prosecutions in cases deemed to affect "the general interests of the country, or of a section of the community, or of a trade." In 1926 a thorough overhaul of those Acts was made, primarily, I assume, for the purpose of stopping real and possible loopholes in them. For example, the law with regard to the marking of imported goods with an indication of place of origin was extended. "Uncompounded drugs from whatever source derived which are sold for medicinal purposes" were exempted, provided that they were not sold or exposed for sale under proprietary names. The Act of 1938 is, of course, familiar to most of your readers.

Treatment of Eczema

It is refreshing to find a contributor to a medical journal claiming success with old and tried treatments of various types of eczema (p. 212). True, the author adds that the use of chemotherapy or antibiotics is often necessary; but that is a different matter from rushing to prescribe them in the first instance. The addition of potassium permanganate to a bath does not commend itself to everyone: the staining effect of that chemical is a drawback. A formula for a sedative (or sedative-tonic) mixture accompanies the remarks on external applications. One of these remarks may be stressed: "Emulsified bases have not ousted the older applications ... since penetration is not the aim, though for the scalp they have the advantage of facilitating removal." I venture to add that in my experience relief from irritation is most speedily obtained with a cream or an ointment composed of zinc oxide, ichthammol, lime water, and a basis containing lanolin; the addition of resorcin or of salicylic acid seems not to help, though different skins may respond differently. Formulas of various types are easily found in books of reference.

Forthcoming International Discussion's

As is generally known, this week's meeting of the British Pharmaceutical Conference is soon to be followed by that of the Fédération Internationale Pharmaceutique (International Pharmaceutical Federation). Its complete programme, which I have not seen, includes, no doubt, many important subjects. From a programme that has arrived I see that three meetings are arranged for the evening of September 17. The first is the first general meeting of the Union Mondiale des Sociétés d'Histoire Pharmaceutique (World Organisation of Societies for the History of Pharmacy); the second is the inaugural meeting of the Académie Internationale d'Histoire de la Pharmacie (International Academy of the History of Pharmacy), at which the George Urdang medal will be presented; these will be followed by a session devoted to "The Organisation of the Union Mondiale des Sociétés d'Histoire Pharmaceutique as the Historical Section of the International Pharmaceutical Federation." At this third meeting short addresses and papers will be read, and the Parmentier medal will be presented. In this connection "The Pharmaceutico-Historical Movement," a reprint of an article by Dr. Urdang in "The American Journal of Pharmaceutical Education," has arrived at an appropriate time. The author gives a list of countries in which the movement has been fully established, with dates of inauguration. They are: France (1913), Germany (1926), The United States (1941), Peru (1949), Spain (1950), Italy (1950), Austria (1951), Benelux Countries (1951).

COMPANY NEWS

Previous year's figures in parentheses

THOMAS KERFOOT & CO., LTD.—Mr. Roland H. Kane (secretary of the company) was appointed to the board on September 1.

A. J. WHITE, LTD.—A final dividend of $7\frac{1}{2}$ per cent. (same) making $12\frac{1}{2}$ per cent. for the year ended March 31 (same) is recommended. Consolidated profit is £216,571 (£197,945); taxation, £118,663 (£120,351). Placed to general reserve is £65,000 (£30,000).

MANCHESTER OIL REFINERY, LTD. — Reorganisation of the group was recently completed when a special resolution was passed in order to change the name of the operating company, Barton Refinery, Ltd., to Manchester Oil Refinery, Ltd.

BEECHAM GROUP, LTD.—Trading profits for the year ended March 31 are as given in preliminary statement (C. & D., July 18, p. 56). The chairman (Sir Stanley Holmes) states that the company is arranging to dispose of its interests in its wholesale grocery and in overseas food canning subsidiaries, the funds to be applied to development of Coca-Cola business. Income from sales of proprietary products amounted to £19,193,361; from sales by grocery wholesale companies, £5,958,735. Consolidated net assets were £20,801,625 (£19,440,039). The following are the returns of some of the group's subsidiaries:—

Beecham Maclean Holdings, Ltd.— Total profit, £1,478,298 (£1,149,244). Taxation, £726,808 (£374,359). Group net profit, £751,490 (£533,585); net profit of Beecham Maclean Holdings £670,238 (£379,070).

Eno Proprietaries, Ltd.— Home profits, £298.434 (£185,205); export and overseas profits, £509.419 (£667,386). Taxation, £393,372 (£449,379), net profit of group £414,481 (£403,212) and of Eno Proprietaries, £268,006 (£185,284).

A. F. Shirley & Co., Ltd.—Net profits after tax, £4,433 (£4,242).

Prichard & Constance (Manufacturing), Ltd. — Net profit, £27,629 (£21,407). after taxation of £22,619 (£31,034).

Veno Drug Co., Ltd.—Home profits, £201,857 (£176,888); export profits, £70,693. After taxation £138,576 (£138,076) etc., net profit was £117,685 (£96,243).

Macleans, Ltd.—Home profits, £813,659 (£516,355); export and overseas profits, £37,851 (£92,794). After taxation of £425,897 (£310,056) net profit was £404,858 (£212,863).

New Companies

P.C. = Private Company; R.O. = Registered Office

A. C. DAYKIN, LTD. (P.C.).—Capital £5.000. To carry on the business of wholesale and retail chemists and druggists, etc. Directors: Albert C. Daykin, M.P.S., and Philip Taylor, R.O.: 11 Church Street, Askern, Yorks.

G. E. CHAPMAN, LTD. (P.C.).—Capital £5,000. To carry on the business of manufacturing and general chemists, druggists, etc. Directors: George E. Chapman, M.P.S., and

Leonard Wooldridge, M.P.S. R.O.: 166 Church Lane, Smethwick.

MILTON THOMAS, LTD. (P.C.).—Capital £1,500. To carry on the business of chemists, druggists, wine merchants, opticians, etc. Directors: Milton Thomas, M.P.S., and Bessie Thomas, R.O.: 127 St. James' Street, Burnley.

WALSH'S PHARMACY, LTD. (P.C.).—Registered in Dublin. Capital £1,000. To carry on the business of chemists, druggists, oil and colour men, etc. Directors: Joseph Burns, Main Street, Cappoquin, co. Waterford; and Margaret Burns.

W. & M. HARRISON, LTD. (P.C.).
—Capital £5,000. To carry on the business of chemists and druggists, etc. Directors: Wilfred Harrison, M.P.S., Mona E. D. Harrison, and Philip Reeve, M.P.S. R.O.: 168 Church Road, Willesden, London, N.W.10.

BUSINESS CHANGES

BOOTS, LTD., have taken over the business of Mr. Orville J. Jones, M.P.S., 12 Mallaby Street, Birkenhead, Ches.

SPICERS, LTD., paper makers, 19 New Bridge Street, London, E.C.4, have opened an office at 33 Melville Street, Edinburgh (telephone: Edinburgh 30448). In conjunction with that office the company have begun a daily delivery service by their own vans from Glasgow to Edinburgh and serving many towns in the intermediate industrial belt. All orders for paper, boards and stationery received in the Edinburgh office up to 5 p.m. will be delivered from Glasgow stock the following day. Deliveries to many towns West and South of Glasgow have been increased to twice weekly.

Appointments

R. P. SCHERER, LTD., 216 Bath Road, Slough, Bucks, have appointed Mr. J. A. Mackenzie, M.P.S., who is a director of the company, their general manager from August 1 (see next column).

THE BRITISH DRUG HOUSES, LTD., Graham Street, City Road, London, N.1, have appointed Mr. A. H. McVeigh, M.P.S., their sales representative in Edinburgh and parts of Scotland, in succession to the late Mr. H. D. Robson.

PERSONALITIES

MR. JOHN J. O'SULLIVAN, L.P.S.I., Dublin, has been appointed a compounder of medicines to the Dublin North City Dispensary.

MR. PATRICK GODFREY, M.P.S.I., Cahir, Tipperary, has been appointed a Commissioner of the Peace by the Eire Minister for Justice.

MR. H. M. HIRST, M.P.S., Scarborough, has been reappointed the Pharmaceutical Society's representative on the committee of management of the Chelsea Physic Garden for a further period of four years from October 1.

MR. R. JACKSON, M.P.S., North Durban, South Africa, called at the offices of The Chemist and Druggist recently. He has been visiting Great Britain for four months—his first long visit to the country since he left for South Africa after qualifying in 1920. He has sold his business, which he conducted in South Africa for twenty-two years, and proposes to do a little locum work on his return to that country.

MR. J. A. MACKENZIE, M.P.S., who has been appointed general mana-

ger of R. P. Scherer, Ltd., Slough, Buckinghams h i r e, was apprenticed to the late Mr. H. W. F. Allan, M.P.S., in Elgin, Morays. He studied pharmacy at the Royal Public D i s p e n sary school of pharmacy in Edinburgh, qualifying in 1930. Mr.



Mackenzie served with Duncan, Flockhart & Co., Ltd., for ten years and in 1940 joined the Ministry of Supply in London as an inspector of medical supplies. In January 1946, he joined R. P. Scherer, Ltd., Windsor, Ontario, Canada, transferring in August of the same year to Gelatin Products, Ltd., Slough, Bucks, as assistant general manager. Later he became sales director of that company which is now R. P. Scherer, Ltd.

MARRIAGES

SMITH—ANDERSON.—At the University Memorial Chapel, Glasgow, on August 5, John Alexander Smith, M.B., Ch.B., Glasgow, S.4, to Patricia Fernie Hunter Anderson, B.Sc., Ph.C., 34 Kingshill Drive, Glasgow, S.4.

HUNTER—DEARDEN. — At Parbold Parish Church, Parbold, nr. Wigan, on August 26, Geoffrey Langhorne Hunter, M.P.S., Langholme, Marylebone, Wigan, Lancs (twin son of Mr. Alfred H. Hunter, M.P.S., and grandson of Mr. Oliver Hunter, M.P.S.), to Helen R. Dearden, Parbold, Wigan.

DEATHS

CORKE.—On August 22, Mr. Harry Malcolm Corke, M.P.S., 79 First Avenue, Gillingham, Kent, aged seventyone. Mr. Corke qualified in 1903.

DAVIES. — On August 16, Mr. Edward Charles James Davies, Tre-lawney, Westfield Lane, Westfield, Battle, Sussex, formerly of 12 Beatty Avenue, Armadale, Melbourne, Victoria, Australia, aged ninety-one. Mr. Davies qualified as a chemist and druggist in 1883 and as a pharmaceutical chemist in 1887.

NICOL. — Recently, Mr. William Geddes Nicol, M.P.S., a former provost of Wigtown, where he carried on business as a chemist and druggist for nearly thirty years. Mr. Nicol was a native of Portsoy, Banff. He qualified in 1901.

TRADE NOTES

Additional Size.—Abbott Laboratories, Ltd., Wadsworth Road, Perivale, Middlesex, have introduced a 2-oz, pack for their product Selsun.



Shaving Brush with Guarantee.—
The latest pure bristle shaving brush to be produced by Halex, Ltd., Highams Park, London, E.4, carries a guarantee for one year. The brush is packed in an acetate unit as illustrated. A feature is the design of the firm, comfortable, white urea handle.

Sulphonamide Cream. — Biorex Laboratories, Ltd., 47 Exmouth Street, London, E.C.1, have made available Cremor sulphanilamid. et sulphathiazol., N.W.F. The pack is a 1-oz. tube.

Christmas Stockroom.—Spa Brushes, Ltd., Chesham, Bucks, are showing their goods for the Christmas trade at a stockroom to be held at the Hotel Metropole, Leeds, September 7-11. Mr. R. Brown will be in attendance until 9 o'clock each evening.

In Airtight Pack.—Anhydrous citric acid prepared by John & E. Sturge, Ltd., I Wheeleys Road, Birmingham, 15, is issued in a container with an Alkathene liner, heat-sealed at the neck to make it proof against damp and contamination.

Now Made in England.—Bronchovydrin, described as "Dr. Weil's original treatment for asthma," is to be manufactured in England under arrangements recently concluded. The sole agents for the United Kingdom are William Martindale Wholesale, Ltd., 14 Bruton Place, London, W.1.

Repackaged. — Genatosan, Ltd., Loughborough, Leics, announce that Genozo toothpas'e has been redesigned in the now fami.iar Genatosan yellow and black colours. Like the Sanatogen design, the Genozo pack and tube are based on an original design by Mr. Leonard Beaumont working in conjunc-



tion with Mather & Crowther, Ltd., the company's advertising agents. Advantages of the new design are much greater readability of the brand name, strong contrasting colours that stand out on shelf or counter, and "an advertisement in miniature," on the sides of the pack.

New Variety at Lower Price.—Coleman & Co., Ltd., Norwich, have introduced Wincarnis "red label" at a lower price than the previous Wincarnis gold label, the red-label product being based on a British instead of a Spanish wine. Heavy national advertising is booked.

Strip Packaging.—Visual Efficiency, Ltd., 2 The Green, Richmond, Surrey, offer a fully automatic strip-packaging machine for pills, tablets and capsules. The machine packages tablets up to \(\frac{1}{6}\)-in. diameter at up to 240 tablets per minute. The tablets are packed by the machine in individual compartments in almost any heat-sealing film or foil.

Change of Telegraphic Address. — In order to expedite the arrival of telegrams at their head office, Burroughs Wellcome & Co., 183 Euston Road, London, N.W.l, announce the installation of a teleprinter there. Telegrams for the company should be addressed Tabloid London Telex. The telegraphic address of the Wellcome Research Institution has been changed to Welscience London Telex.

Television Film. — The B.B.C. television feature "Science Review" included on August 28 a film on "Allergies." The film showed various forms of hypersensitivity, the preparation of allergen extracts, and demonstrations of skin testing. Most of it was taken at the laboratories of C. L. Bencard, Ltd., Minerva Road, London, N.W.10, with shots of the company's pollinarium near Dorking. The film is again being televised on September 8.

Fluorinated Plastic. — After three years of restricted supply Fluon brand polytetrafluoroethylene is now freely available. The material has a range of working temperature from -100° C. to +250° C. or even 300° C., has extreme chemical inertness and solvent resistance, good mechanical and electrical properties, and unique low friction characteristics. In the chemical industry it has applications in gaskets and packings for pipework, valves, pumps and large vessels; as diaphragms and valve seats, O-rings, oil seals, bellows, and parts for pumps.

Unit Pack.—Evan Williams Co. recently introduced a unit pack of their liquid lanolin shampoo. The sachet is produced for the company by Ivers Lee (Great Britain), Ltd., Slough,



Bucks, in a laminate of paper to Pliofilm, the liquid being retained, of course, by the Pliofilm layer. A print design is used, and to facilitate easy opening the sachets are notched for tearing across the corner, a small diagram demonstrating the mode of use. The printed material was produced by the Robinson Waxed Paper Co.

NEW PRODUCTS AND PACKS

Chlorophyll-treated Toilet Roll.— Claimed to be the first of its kind, the Softex chlorophyll-treated toilet roll is announced by the Swan Mill Paper Co., Ltd., Swanley, Kent.

Introductory Bonus.—To introduce the Dispel wick vase, Advance Industries, Ltd., 87 Regent Street, London, W.1, are charging twelve as ten. Heavy Press advertising has been booked.

Aluminium Glycinate Tablets.— Macleans, Ltd., Great West Road, Brentford, Middlesex, announce the introduction of Macleans tablets with aluminium glycinate, "the ideal dry form of aluminium gel." Special bonus parcels are available until November 15.

A New Hand Cream.—Reckitt & Colman, Ltd., Dansom Lane, Hull, are marketing under the name Nulon a hand cream containing lanolin, glycerin and almond oil. Nulon is in bottles of two sizes in display outer of 1 doz. Press advertising on a national scale is booked.

A New General Sedative.—Laboratory Nativelle, Ltd., 74 White Lion Street, London, N.1, announce the introduction of Natisedine, a new general sedative with elective cardiac action. Each tablet contains quinidine

phenylethylbarbiturate 0·10 gm. Natisedine is issued in tube of twenty and dispensing pack of 100 tablets.

Cushion Hairbrush with Decorated Back.—Addis, Ltd., Brushworks, Hertford, announce "the first cushion hairbrush with a decorated back." The silvered design on the back of the hairbrush is Elizabethan in motif, and plated on to the plastic, giving an unusual and attractive effect. The hairbrush is available in moonstone-blue, zircon-green and pink topaz in special display boxes.

An Analgesic Balm.—Moore Medicinal Products, Ltd., 1 Queen's Terrace, Aberdeen, and 64 Gloucester Place, London, W.1, are introducing to the medical profession a new analgesic balm: In-go. The preparation contains tolazoline hydrochloride 2 per cent., glycol monosalicylate 15 per cent., and capsicin 0.1 per cent. Tolazoline hydrochloride is claimed to relieve pain due to vasospasm, to prevent the accumulation of the products of muscle metabolism, and to facilitate the absorption of analgesic drugs. In-go is therefore indicated in the treatment of fibrositis, lumbago, muscular rheumatism, neuritis and sciatica. It is issued in collapsible tubes containing 1½ oz.

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A Wide Landscape—and Pharmacy's Part in It

MEMBERS of the British Pharmaceutical Conference have been conducted by their chairman (Dr. G. R. Boyes) to a point of vantage and shown a wide land-scape—almost, like the one shown to Moses when he went up from the plains of Moab, "unto the utmost sea."

Dr. Boyes is a good guide, and from his varied background as pharmacist, medical propagandist and physician, he brought the landmarks into sharper relief to his hearers by sketching in something of their history. He showed which of the new prominences are most significant of future changes, and why some former features have disappeared, when others once condemned or written off as obsolete linger on, perhaps even taking on a new lease of life.

Dr. Boyes, who had taken as his title "The Pharmacist and Therapeutics," referred to his address as a review of "some of the contributions made by pharmacy to the materia medica of today." With that as his intention it was clearly appropriate and even necessary that he should start by giving his definition of pharmacy and the pharmacist. He did so by quoting the five functions listed by the Pharmaceutical Society in 1952 as being the province of the hospital pharmacist:—

- 1. To obtain and be responsible for the nature and quality of drugs, etc.
- 2. To make preparations and to formulate preparations to meet special needs.
 - 3. To dispense prescriptions.
- 4. To assist in the development of new methods of treatment.
 5. To advise upon the nature and properties of substances used in medicines, and upon their selection.

The speaker went on to describe contributions to the materia medica far wider than have been or could be made by pharmacy or any other single profession. Indeed, as the enumeration passed from synthetic chemicals to hormones, antitoxins, human blood and plasma one was given pause to wonder whether pharmacists were not, perhaps, over-estimating the importance of their rôle in the advance of medical discovery. To offset that impression, he emphasised that the introduction of a new drug is often the result of teamwork with organic chemists, biochemists, pharmacologists, physicians and pharmacists all in the team. He pointed out that formulation is one of the most important responsibilities of the pharmacist (and formulation, of course, comes normally as one of the later stages of the launching of a new drug).

Moreover, as Dr. Boyes was speaking to a pharmaceutical audience and not to the outside world, it was perhaps intentional that he did not clinch his arguments by any underlining. He could, for laymen, have stressed first, that whether a new drug comes from the patient examination by chemists of hundreds of complex compounds, from the researches of biologists illuminating the mechanism of function of a part of a human or animal, or from the clinical observations of a specially acute physician, there comes a point at which the pharmacist takes over, to establish standards, to study stabilities, to examine media and to elaborate methods of manipulation. Secondly, when mentioning formulation as an important part of the work of the pharmacist, he could have insisted on the very high status that should be accorded to that function in the launching of a new drug. Thirdly, though he implied, he might have stated in concrete terms that the work done in the laboratories of manufacturing houses, and having its outcome in new medicaments, is substantially contributed to by pharmacists, a growing number of whom are entering research and development departments. He might further have pointed out that the annual Conference itself is a contribution by pharmacy to therapeutics.

If, instead, he took a more reticent attitude as to pharmacy's achievements in therapeutics, the effect of his able survey of so wide a landscape will stimulate his younger hearers especially to stake out a larger claim in that territory. Reversing the lot of the prophet, who was allowed to see but not to enter the promised land, we should like to feel that Dr. Boyes's message had been, in effect, "I have caused thee to see it with thine own eyes . . . that thou shalt go over thither."

Pharmacies in the Census

THOSE pharmacists who filled in their Census of Distribution forms for the year 1950 may now—particularly if mathematically minded—compare their figures with the average figures for the town, city or county in which they are situated, or with the figures for any of the 368 towns of Great Britain which have a population of over 25,000.

From the first volume of information resulting from the census (see C. & D., August 29, p. 203) and from its 142 pages of tables, innumerable calculations may be made. Taking again the ten towns selected last week, we find that in eight of them—Birmingham, Bournemouth, Cardiff, Cambridge, City of London, Manchester, Newcastle-on-Tyne and Torquay, pharmacies had an average turnover of more than £10,000. Of those only two-City of London (£22,970) and Cambridge (£18,821) had an average greater than £14,000. That the City of London's thirty-three pharmacies should top that list for turnover was to be expected, in view of its dense population during shopping hours on five days a week. But that Edinburgh which in other spheres shows its metropolitan character and its attraction as a shopping centre should be lowest, with an average of £8,292 is a sad reflection of the over-high proportion of pharmacies per 1,000 of population in that city. Glasgow had a higher average, but failed to reach five figures. Comparing the two seaside resorts, Bournemouth and Torquay, we find that Torquay's twenty-eight pharmacies had an average of £12,571, Bournemouth's eighty-two an average of £10,439. Cardiff's recorded eighty-one pharmacies, returning an average sales turnover of £11,950, may be compared with Newcastle-on-Tyne's average of £13,785 from eighty-four pharmacies. The average for Birmingham's 313 pharmacies was over £1,000 more than for Glasgow's 317. The average amount paid out in salaries per pharmacy can also be calculated, but the figures are of little practical assistance, since they do not include the drawings of proprietors. Whilst the Board of Trade estimates that the figures given in the Report cover 91 per cent. of the trading establishments, chemists appear to have fallen below that level. From a check with the register of pharmacies at that time, there should have been altogether 566 pharmacies in six of the towns discussed above, whereas the returns give the number of 488, or 84 per cent. Nevertheless, the results of the Census (the first of its kind to be published here) do, even allowing for shortcomings, fill a gap that has long existed in the information available about retail trade distribution of Great Britain.

CORRESPONDENCE

Letters when received must bear the name and address of the sender, not necessarily for publication. The Editor does not hold himself responsible for the views expressed.

VITAMIN B12 INJECTIONS

SIR,—The paper on cyanocobalamin and hydroxocobalamin in vitamin B₁₂ injections which my colleagues and I had the honour to present to the British Pharmaceutical Conference in London on August 31, seems to have raised some apprehension regarding the possible presence of hydroxocobalamin in those injections. As that apprehension may be shared by some not able to attend the Conference, at which the question was discussed, may I ask for space

to explain the present position.

The results of our survey of vitamin B₁₂ injections in general use in the U.K. indicate that hydroxocobalamin should not occur in them in significant amount until they have been stored, under usual conditions, for more than a year. The injections therefore compare favourably with the injections we obtained direct from manufacturers in the United States, which were two to eight months old when we tested them. It is true that in some of the older injections we found appreciable amounts of hydroxocobalamin, ranging from 10 to 90 per cent, of the total cobolamins present, Since B.P., 1953, and U.S.P. XIV define vitamin B₁₂ as cyanocobalamin, but the present official tests for vitamin B₁₂ injections will not detect hydroxocobalamin until it represents about 25 per cent. of the total cobalamin, it is perhaps not surprising that the presence of hydroxocobalamin in those injections was not discovered until our spectrophotometric method became available. As most of the injections had been stored in the cardboard boxes supplied by the manufacturers, it may be assumed that such boxes may not afford complete protection against the action of light which has been shown to convert cyanocobalamin into hydroxocobalamin. More experiments will obviously be needed to establish this assumption, and test the efficiency of different containers. Preliminary results in our further experiments show that complete protection may require more efficient methods than are provided by some of the cardboard containers at present in use. During fourteen days' exposure to bright sunlight of injections in such containers, we have found 12.5 per cent, of the cyanocobalamin to be converted to hydroxocobalamin, whereas no change was detected in the same injection when stored in a dark cupboard.

Clinicians with whom we have discussed the question admit that some vitamin B₁₂ injections which have been used in this country may have contained appreciable amounts of hydroxocobalamin. That, however, should not cause any anxiety, because pure hydroxocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cyanocobalamin has been shown to possess the hæmatopoietic activity of cy min and not to produce any undesirable side-effects. It has,

indeed, been suggested that hydroxocobalamin may be the true vitamin B_{12} . There is, of course, the possibility that, when vitamin B_{12} injections are exposed to light, this may produce not only hydroxocobalamin but also undesirable decomposition products. Spectrophotometric studies in these laboratories, of which preliminary accounts have already been given, 3, 4, provide evidence, based on systems of isobestic points, for the conversion of cyanocobalamin direct to hydroxocobalamin with no intermediate product. It is true that, in solutions of vitamin B_{12} in which hydroxocobalamin has been formed by the action of light, some decomposition products may develop during subsequent storage in the dark, if the pH is below 4. The pH of vitamin B₁₂ injections is permitted by B.P., 1953, to fall to 3.5, but as none of the injections we examined had a pH below 5, it therefore seems reasonable to suggest that the B.P. lower limit for the pH of vitamin B₁₂ injections should be raised to 4.0.

As stated in our paper, injections of cyanocobalamin containing up to 50 μ gm. of hydroxocobalamin formed by the action of light have been administered to myself and my colleagues without untoward effects in the course of our investigation into the cyanide and thiocyanate metabolism of man. Finally, some apprehension may have been caused by our finding that the majority of vitamin B₁₂ injections at present in use in this country would not satisfy the requirements of B.P., 1953, because they contain more than 96.5 per cent, of the claimed cyanocobalamin content. We are glad to state that this difficulty has now been overcome by the deletion of this upper limit in the B.P. that became official on September 1.

KING'S LANGLEY, HERTS

FRANK WOKES Ovaltine Research Laboratories

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- Wokes, Baxter, Horsford and Preston, Biochem. J., 1953. 53. 3. xix. Wokes, Baxter and Horsford, paper read to XIIIth International Congress of Pure and Applied Chemistry, Stockholm, 1953.
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Onward from Galen A CURRENT CAUSERIE

An officially appointed working party that has been investigating for the past two years the conditions within a sister-profession in the health service, that of sanitary inspectors, has recommended in its recently published report a change in the title of those health workers. The title "public health inspectors" is considered to be more descriptive of the inspectors' present duties. The working party recommend, too, that an educational body to be known as the Public Health Inspectors' Education Board should be established. The body would conduct the qualifying examination and other advanced or specialist examinations, and would have general responsibility for the education of the inspectors.

A LETTER in the British Medical Journal some months ago serves to emphasise the need for the pharmacist to give lectures to nurses in hospitals having a nurse-training school. The writer had been trained in his medical school to use the correct pharmacopæial or approved names for the drugs he ordered. His experience when working in smaller hospitals had been that the names were unknown and that the nursing staff requested him to use the "proper," i.e., the proprietary names.

A PHARMACIST'S ANTHOLOGY

THE village survival is often apparent in the shops of London. Even in that most artificial part of the town, Mayfair, there are to be found, amid the showy hotels and the New Yorkish apartment blocks, little shops that keep a Cranford look—nice, old-fashioned chemists with red and blue bottles in the windows, and, inside, the magic jars with the gold signs on them.—From "The Moods of London," by R. J. Cruikshank.

FIGURES IN THE PHARMACEUTICAL WORLD

COULD that illustrious pioneer of British pharmacy the first presi-dent of the Pharmaceutical Society have looked forward a century and more into the future, he would doubtless have been experiencing a glow of satisfaction that the house that bears his name should, within a generation or so of 1953, have provided three chairmen of the British Pharmaceutical Conference. The present directors of Allen & Hanburys, Ltd., must themselves feel proud of that record.

Not that this year's chairman, Dr. G. R. Boyes, is strictly a child of the G. R. Boyes, is strictly a child of the company. In his own right he has a markedly pharmaceutical background and associations, and in fact has been with Messrs. A. & H. for less than ten years. He was educated at Emanuel School, Wandsworth Common, and served his apprenticeship with his father in the pharmacy at Balham Hill, London, S.W.12, that still carries the name Boyes on the facia. The late Mr. W. J. Boyes, M.P.S., far from being a hard task-master, allowed his apprentice more master, allowed his apprentice more than ample time off for evening and even day classes at Battersea Polytechnic to study chemistry, pharmacy and materia medica. In the business itself George's pharmaceutical education was not neglected, for during his apprenticeship, which began in 1914, he made many of the tinctures and infusions (there were still some fresh infusions in those days) of the Pharmacopæia and had a thorough grounding in practical pharmacoutical work ing in practical pharmaceutical work. In the midsummer of 1917 he gained the Jacob Bell scholarship, and entered into a full-time course at "the Square," the Pharmaceutical Society's School of Pharmacy. Living at home, he continued to do pharmaceutical odd jobs in the pharmacy, the combination of "real" and theoretical work standing him in such good stead that he secured the Martindale medal in 1918, the year in which he qualified as a chemist and divisit and the Power medal. ist and druggist, and the Pereira medal and Ph.C. in 1919. Imperfect sight had kept him out of the Army Service in the 1914-18 war, but going back to the Square as demonstrator in chemistry he came in for the full brunt of the rest war, rush of ax Army brunt of the post-war rush of ex-Army entrants intent on securing the right to practise a "civvy street" vocation. Still he found time to further his own studies by doing practical work for his Associateship of the Institute of Chemistry (it was not then "Royal") which he gained in 1921. He was going on from there, studying for a science degree, when he applied—and science degree, when he applied—and was accepted — for his first outside post: in the "medical and scientific" department of Parke, Davis & Co., then at Beak Street, London, W.1. Before he actually joined Messrs. P.D. he received news of his graduation.

The exacting standards of medical propaganda of that old-established "ethical" manufacturer are well known. Boyes remained with the company for twenty years, though "respectively."

pany for twenty years, though "remained" is perhaps too passive a word, for he was far from static,



9. Dr. G. R. BOYES

academically speaking, in that period. He gained his Fellowship of the Institute of Chemistry, and in 1929, at the Dublin meeting of the British Pharmaceutical Conference, joined the late Mr. C. E. Corfield as one of its joint secretaries on the retirement of Dr. C. H. Hampshire from that office. He remained a Conference secretary for seventeen years, handing over to Mr. H. Treves Brown after the 1945 meeting at Torquay, himself becoming Conference treasurer.

But meantime he had been extend-

ing his horizons. By spare-time study, plus the necessary time allowed from his work at P. D. & Co. for attend-

ance at hospital, he secured a medical qualification, becoming a Licentiate of the Society of Apothecaries of London in December 1941.

Shortly afterwards Allen & Hanburys, Ltd., were looking for a suitably qualified person to create and conduct a Medical Department, and conduct a Medical Department, and Dr. Boyes was entrusted with the work. It may be said that he enjoys the confidence of two professions, for he is assistant secretary of his local division of the British Medical Association and one of its delegates to the annual B.M.A. conference, at the same time being vice-president of the South-west London Chemists' Association. But his connection with every-day pharmacy remains the more close. It is not generally known that he has many opportunities of assisting behind the scenes in the running of the limited company that is still essentially a family business, and in which his pharmacist wife, until her inopportune death this year, was most active. Dr. Boyes was a member of the Codex Revision Committee that produced the 1934 British Pharmaceutical Codex, and was then and is now chairman of its action and uses subcommittee. Members attending the London meeting of the Conference this year will recognise that its chairman brings to bear on the conduct of his office a knowledge and experience gained in many departments of pharmaceutical work.

AMERICAN APPROVED REMEDIES

Preparations accepted by the American Medical Association's Council on Pharmacy and Chemistry for inclusion in its list of "New and Nonofficial Remedies":—

TOLULEXIN TABLETS.—Brand of mephenesin tablets issued in 0.25 gm, strength by E. S. Miller Laboratories, Inc., Los Angeles.

DANILONE TABLETS.—Brand of phenindione tablets issued in 50 mgm, strength by Schieffelin & Co., New York.

ELIXIR SULESTREX PIPERAZINE.—A flavoured clixir containing 0.3 mgm, of piperazine æstrone sulphate per mil, Issued in 110 mil bottles by Abbott Laboratories, North Chicago, Illinois.

CHLOROPROCAINE PENICILLIN O. — A crystalline salt of 2-chloroprocaine and penicillin O. When administered intramuscularly a depôt of penicillin O is established similar to that of penicillin G produced by injections of procaine penicillin G, Administered in an aqueous suspension (300,000 units per mil). In many infections, a daily dosage of 300,000 units is sufficient. The Upjohn Co., Kalamazoo, Michigan, issue Depo-Cer-O-Cillin Chloroprocaine—1,500,000 unit vials of chloroprocaine penicillin O.

AUROTHIOGLYCANIDE, — C-Auromercapto-acetanilid, a water-insoluble gold compound used for the treatment of rheumatoid arthritis on the same basis as water-soluble gold salts. It is absorbed more slowly from the tissues than gold salts and produces fewer undesirable reactions (caution against toxic reactions, however, is necessary). Administered into the gluteal musc.e by injection of a suspension in oil. Initial dose not more than 25 mgm, Dose increased as tolerated by increments of up to 25 mgm, administered at weekly intervals for twenty-two weeks (maximum single dose is 150 mgm.). Endo Products, Inc., Richmond Hill, New York, issue suspension Lauron, in oil in 5- and 10-mil vials—a suspension of aurothioglycanide in sesame oil containing 50 and 150 mgm per mil.

TEST PRESCRIPTION

In Oldham recently a firm of chemists was cautioned for dispensing a test prescription containing an excess of 17.5 per cent, potassium hydroxide. The pharmacist who dispensed the prescription told the Pharmaceutical Service Committee that he had put the potassium hydroxide on top of liquefied phenol in the measure. The pharmaceutical members of the committee were of the opinion that the phenol and hydroxide should have been measured separately. One member suggested that the ingredients might have been mixed together to get a better solution.

GUIDE TO NEW MEDICAMENTS

Information about proprietary products supplied principally on prescription. Reprints on perforated gummed paper for affixing to index cards are obtainable.

AMYTAL AND BELLADONNA

Manufacturer: Eli Lilly & Co., Ltd., Basingstoke, Hants.

FORMULA: Tablets each containing amylbarbitone (Amytal), gr. ½ (16 mgm.); dry extract of belladonna, gr. ½ (16 mgm.).

INDICATIONS: Functional and nervous dyspepsia, gastric ulcer, colitis, etc.

Dosage: Average adult dose, one tablet three times daily.

How Packed: In bottles of 100 and 1,000. First Issued: May 1953.

SEBBIX

MANUFACTURER: Genatosan, Ltd., Loughborough, Leics.

DESCRIPTION AND FORMULA: A cream containing purified fraction equivalent to crude coal tar, 10 per cent.; sulphur, 3 per cent.; salicylic acid, 2 per cent., in a water-miscible base.

INDICATIONS: Dandruff, crusted or scabbed stage of seborrhæa and in psoriasis of the scalp.

How Supplied: In tube of 1 oz. First Issued: May 1953.

TRANSVASIN

MANUFACTURER: Lloyd Hamol, Ltd., 3 St. James's Square, London, S.W.1.

Description: A cream containing, in the percentages indicated, salicylic acid tetrahydrofurfuryl-ester, 14; nicotinic acid ethyl-ester, 2; nicotinic acid n-hexyl-ester, 2; p-aminobenzoic acid ethyl-ester, 2, in a water-miscible base.

INDICATIONS: As an analgesic and rubifacient.

How Supplied: In tube of 1 oz. in container of 1 doz. First Issued: June 1953.

EURAX OINTMENT

MANUFACTURER: Pharmaceutical Laboratories Geigy, Ltd., Rhodes, Middleton,

DESCRIPTION AND FORMULA: An ointment containing crotonyl-N-ethyl-o-toluidide, 10 per cent., in an odourless, non-greasy base.

INDICATIONS: Itching dermatoses,

USE: Massage a small quantity into the affected area as often as necessary.

One application is usually effective for six to twelve hours.

How Supplied: In tubes of 2 and 4 oz. and jar of 1 lb. First Issued: July 1953.

SURFATHESIN COMPOUND CREAM

MANUFACTURER: Eli Lilly & Co., Ltd., Basingstoke, Hants.

DESCRIPTION: A cream containing Surfathesin brand cyclomethycaine, 0.5 per cent.; zinc oxide, 10 per cent.; and Merthiolate (thiomersalate), 1:5,000, in a modified vanishing-cream base.

INDICATIONS: To provide local anæsthetic effect, etc., in measles, chicken-pox, severe sunburn, etc.

How Supplied: In tube of 1 oz. First Issued: May 1953.

Note: Surfathesin was formerly known as Topocaine.

BIDROLIN TABLETS

MANUFACTURER: The Armour Laboratories (Armour & Co., Ltd.), Lindsey Street, London, E.C.1.

DESCRIPTION AND FORMULA: Tablets each containing dehydrocholic acid, gr. 1·9, and choline, gr. 2·5 as choline bitartrate

INDICATIONS: Biliary stasis, indigestion, constipation and flatulence of biliary origin.

DOSAGE: Two tablets after meals two or three times daily, as required. Simultaneous administration of atropine or belladonna facilitates the flushing action of Bidrolin in the presence of spasm of the sphincter of Oddi.

HOW SUPPLIED: In bottles of fifty, 100, 500, and 1,000 tablets.

FIRST ISSUED: June 1953.

AQUAVIRON

MANUFACTURER: British Schering, Ltd., 229 Kensington High Street, London, W.8. DESCRIPTION: An aqueous suspension of free testosterone adsorbed on aluminium phosphate, each 1 c.c. containing 25 mgm. testosterone.

INDICATIONS: In the male: Climacteric syndrome and premature senility, hypogonadism, eunuchoidism, eunuchism, organic impotence. In the female: metropathia hæmorrhagica, inoperable mammary carcinoma, or post-operative secondary carcinoma.

DOSAGE: Varies with condition treated and response obtained.

How Supplied: In boxes of two, five and twenty-five ampoules each containing 1 c.c. First Issued: July 1953.

PRODEXIN

MANUFACTURER: C. L. Bencard, Ltd., Park Royal, London, N.W.10.

DESCRIPTION AND FORMULA: Tablets each containing aluminium glycinate (dihydroxy aluminium aminoacetate), 0.9 gm., magnesium carbonate, 0.1 gm. INDICATIONS: Hyperacidity and peptic ulcer.

Dosage: One to be sucked every two hours or when necessary. For acute attacks the tablets may be chewed.

How Supplied: In packs of thirty and 240 tablets. First Issued: July 1953.

REFERENCES: Ivy, Grossman and Bachrach, Peptic Ulcer, pp. 867-871, 897-8, 903-6, J. & A. Churchill, Ltd., London, 1950; Murphey, J.Am.pharm.Ass., 1952. 41, 361; Krantz and colleagues, J. Pharmacol., and exp. The ap., 1944. 82, 247.

PROTANDREN LINGUETS

Manufacturer: Ciba Laboratories, Ltd., Horsham, Sussex.

DESCRIPTION: Tablets for sublingual administration, each containing 25 mgm. methylandrostenediol.

INDICATIONS: Promotion of protein anabolism in conditions associated with wasting and asthenia: gynæcological conditions including symptoms of the climacteric, mammary carcinoma, dysmenorrhea, and suppression of lactation: osteoporosis.

Dosage: The dosage varies according to the condition under treatment.

HOW SUPPLIED: In bottles of twenty-five, 100 and 500 Linguets.

FIRST ISSUED: August 1953.

References: Goodman and Kupperman, J. Clin. Endocrinol., 1951. 11, 787; Gordan. Eisenberg, Moon and Sakamoto, ibid., 209; Hall, G. J., Amer. J. Obstet. Gynec., 1951. 62. 665; Henderson and Weinberg, J. Clin. Endocrinol., 1951. 11, 641.

DICYCLOMINE HYDROCHLORIDE

Brand Name: WYOVIN* tablets

Manufacturer: John Wyeth and Bro., Ltd., Euston Road, London, N.W.1.

DESCRIPTION: β diethylaminoethyl-1-cyclohexylcyclohexane carboxylate hydrochloride, an antispasmodic.

INDICATIONS: As an adjuvant in peptic ulcer; ulcerative colitis; intestinal hypermotility, biliary spasms, dysmenorrhæa, etc.

Dosage: One to two tablets (see below) two or three times daily.

How Supplied: In bottles of fifty and 250 tablets each containing 10 mgm. First Issued: July 1953.

*Cross reference for card index:

WYOVIN TABLETS: see dicyclomine hydrochloride.

CHLOROPYRAMINE

Brand Name: SYNOPEN*

Manufacturer of Brand: Pharmaceutical Laboratories Geigy, Ltd., Rhodes, Middleton, Manchester.

DESCRIPTION: N-dimethyl-aminoethyl-N-p-chlorbenzyl-α-aminopyridine hydrochloride.

INDICATIONS: Antihistaminic therapy.

Dosage: Average adult dose, three to six tablets (see below) daily, swallowed whole and taken preferably during a meal.

How Supplied: In containers of twenty, 100, and 200 sugar-coated tablets each containing 25 mgm.

FIRST ISSUED: July 1953.

*Cross reference for card index:

SYNOPEN: see chloropyramine.

NEW GERMAN PROPRIETARIES

VALAMIN. — Each tablet contains 0-4 gm. (*d*-ethinyleyclohexyl) carbamate. Indicated in insomnias, especially those of nervous origin, during physical and psychical crises, mental over-exertion, etc. Dose: one tablet half an hour before retiring (children, \(\frac{1}{4}\)—1 tablet). Packs of ten tablets are issued by Schering, A.G., Berlin (West) (*Apothekerztg*, May).

ACETHROPAN.—Purified and standardised adreno-corticotropic hormone. For various affections of the organs of mesenchymic origin, lymphatic tissue, bone medulla, connective tissue and synovial membranes, Packs of one and five ampoules of ten units and one and five bottles of forty units issued by Farbwerke Hæchst, A.G., Frankfurt-am-Main, Höchst. (Apothekerzig, Junc.)

KOLTON.—Each tablet contains 3 mgm. N-methyl-piperidyl- 4 -benz-hydryl-ether- 8 -chlorothio-phyllinate. Indicated in pruritus, dermatoses, food and drug allergies, hay fever, migraine of allergie type, travel sickness, etc. Dose: 1-3 tablets several times daily (every 3-6 hours). Packs of 20 tablets are issued by Chemische Fabrik Promonta G.m.b.H., Hamburg. (Apothekerztg, Junc.)

DEPOT-IMPLETOL.—A sterile, almost colourless, odourless, isotonic solution of 3.42 per cent. equimolecular active complex of procaine and caffeine in a viscous, aqueous solution of polyvinylpyrrolidone. Indicated in neurotherapy in which there are long-standing painful 'conditions of various origins; peripheral circulatory troubles, etc. Dose: local use; 0.5-2 mils by deep subcutaneous, intramuscular, perineural or periasticular injections. Packs of five ampoules of 2 or 5 mils issued by Bayer, Leverkusen. (*Apothekerztg*, June.)

HAMOCITRAT.—Solution of citric acid salts in human placenta extract, sterilised by a special method of preservation, Contains a range of water and oil soluble vitamins, amino acids, lipoids and ferments. For prophylaxis and therapeutics of thrombosis, Prevention of hæmorrhage before operations, etc. Dose: 1 ampoule (2 if necessary) slowly injected (one ampoule per two minutes) into the gluteus maximus muscle upper outer quarter, Packs of two ampoules of 10 mils issued by OWG-Chemic G.m.b.H., Kiel. (Apothekerztg, June.)

HAMOSEPT. — 3-amino-4-oxybenzol-arsendichloride-hydrochloride with added alkali forming a neutral solution of 3-amino-4-oxybenzol arsenoxide. Indicated as a spirochætocidal addition to transfusion blood. It possesses the power to kill rapidly any spirochætes present. Also as an addition to fresh blood and as blood preservative. One ampoule of 5 mgm, to 250 mils blood or one ampoule of 10 mgm, to 500 mils. Packs of twenty-five dry ampoules of 5 mgm. or 10 mgm, issued by Farbwerke Hœchst A.G., Frankfurt-am-Main, Höchst. (Apothekerztg, Junc.)

THROMBOPHOB OINTMENT.—Heparin, 5,000 units per 100 gm., pyridin-\(\beta\)-carbonic acid benzyl ester, 2.5 per cent. For Thrombophlebitis, superficial thrombosis, ulcus crudis, furunculosis and other inflammatory infiltrations; to hasten resorption of hæmatomata, prevention of thrombosis during intravenous injections. The ointment should be spread carefully on the affected parts several times daily, without rubbing or massage. Tubes of fifteen and 100 gm. are issued by Nordmark-Werke, G.m.b.H., Hamburg (Pharm. Ztg. Nachrichten, April 5).

GERMAN BOGOMOLETZ SERUM. — Reticulo endothelium activating serum (R.A.S.) obtained by the immunisation of rabbits by Professor Bogomoletz' method. Indicated in premature manifestations of old age, loss of mental and physical capacity, recalcitrant wounds and fractures, convalescence following traumatisms, and infections, etc. Dose according to purpose, best controlled by intradermal use. Packs of five ampoules of serum. 0-1 mil with 5 ampoules of normal saline solution, 2 mils. Issued by Kommanditgesell-schaft. W. Schwarzhaupt, Köin-am-Rhein (Pharm. Ztg. Nachrichten, April 5).

TRADE REPORT

The prices given are those obtained by importers or manufacturers for bulk quantities or original packages. Various charges have been added whereby values are in many instances augmented before wholesale dealers receive the goods into stock. Crude drugs and essential oils vary greatly in quality and bigher prices are charged for selected qualities.

LONDON, SEPTEMBER 2: The markets showed little or no sign of extra activity during the past week. Consumers were generally content to satisfy their current needs and gave no indication of a desire to build up supplies. Particularly firm in the CRUDE DRUGS market were IPECACUANHA and Portuguese ERGOT. It was virtually impossible to get shipment offers of ipecacuanha, whilst spot supplies are now exceedingly small.

The upward trend of ergot continued; the shipment price advancing by 3s. 6d. per lb. over that of the previous week. Always a highly speculative market, ergot has thus risen by more than 50 per cent. in the course of a month. According to origin the carry-over of old-crop material is much less this year than last, a large quantity of old-crop having been sold in Switzerland. So soon as that was known the speculators began to buy up as much as they could, hence the present state of the market. Brazilian MENTHOL is firm at origin as a result of sales made in that country to the United States, but Chinese menthol, the more popular in the London market, continued weak. Tolu Balsam, which for a short time could be bought at under 17s. per lb. for the genuine, jumped up to 18s. 6d. Cascara Sagrada was unchanged in the forward position. There is little Oralis Root on the spot and it was difficult to buy any for forward delivery. Papain eased a further 1s, per lb. during the week, but Turmeric continued firm.

The only price movement of note in Pharmaceutical Chemicals was a 10s, per cwt. reduction in the price of Cream of Tartar on August 31.

CASTOR OIL has been in better demand, and supplies at the mills are now stated to be well below normal. Although the forward prices of the oil are at their lowest levels for years, some rise is expected if the present demand continues. In ESSENTIAL OILS, lower per lb. are Chinese ANISE (by threepence); Madagascar CLOVE LEAF (sixpence); LEMONGRASS (one penny); PETITGRAIN (sixpence) and CAJUPUT (1s.). Among the oils that were dearer per lb. were: PATCHOULI, Penang (by sixpence), and Spanish ROSEMARY (threepence).

UNITED STATES DRUG AND CHEMICAL REPORT

New York, September 1: Leading producers of Citrates raised prices as a belated follow-up to the citric acid rise in June. Potassium citrate is now 41 cents a lb. (up 3½ cents) and Caffeine citrate \$2.65 (30 cents). Imports of Theophylline resulted in a price cut to \$3.15 a lb. (down \$1.25), while Aminophylline dropped to \$3.15 (\$1.15). Glycerin values dropped by 6 cents a lb. despite lower stocks.

Whole IPECACUANHA is quoted from \$6.50 a lb. (up \$1.25). Natural LIQUORICE ROOT is up to 12 cents a lb. against a former seven to nine cents, while powdered is 17 cents, up from a 12 to 14 cent range. LOBELIA HERB is 45 cents a lb., up five cents, and SASSAFRAS

BARK, 45 cents per 100 lb., up five cents. Ergor is now priced from \$3.50 a lb., up \$1.15. VANILLA BEANS are firmer, but minimum quotations have not changed. Brazilian Menthol was also firmer with quotations at \$5.60 to \$5.75, but Japanese menthol fell 10 cents to \$7.40 per lb.

Higher a lb. among ESSENTIAL OILS are LEMON at \$7.50 (up 40 cents); PATCHOULI, \$8.00 (50 cents); LEMONGRASS, \$1.05 (five cents); and CITRONELLA, 50 cents (two cents). Lower a lb. are CLOVE LEAF at \$1.85 (down 15 cents) and RUE, \$1.15 (five cents).

Pharmaceutical Chemicals

ASPIRIN.—Prices are as follows:—5-cwt. lots, 4s, 6d. per lb.; 1-cwt., 4s, 6½d.; 28-lb., and under 1-cwt., 5s, 4d. Rates per 1,000 for TABLETS are as follows:—5,000, 4s, 10d.; 5,000 and over, 4s, 8d.; 10,000, 4s, 7d.; 25,000, 4s, 5d.; 100,000, 4s, 3d.; 250,000, 4s, 2½d.; 1 million, 4s, 1d.

CREAM OF TARTAR.—Lower. Rates for the home trade are now as follows:—1-ton lots, 191s. per cwt.; 10-cwt., 192s.; 5-9-cwt., 193s.; 2-4-cwt., 194s.; 1-cwt., 195s., delivered.

CRESOL.—Price of B.P. quality from distillers is 7s. 9d. per gall. in 5-gall. lots.

CYCLOBARBITONE.—B.P.C. and CALCIUM DERIVATIVES in 1-cwt. lots are 75s. per lb.; small lots from 77s. 3d. to 79s. 6d. per lb.

DEXTROSE.—Rates (per lb.) for B.P. material are as follows:—

MONOHYDRATE		1-4 cwt. 5-cwt.
1-lb. carton 7-lb. tin 14-lb. tin 28-lb. tin		s. d. s. d. 111½ — 110½ 1 9 1 9 1 1 8 1 1 7½ Above, less 12½ per cent. to wholesalers, delivered. £127 per ton, ex works or store, for minimum 1-ton lots.
ANHYDROUS		1-4 cwt. 5-cwt.
7-lb. tin 14-lb. tin 28-lb. tin	• • • • • • • • • • • • • • • • • • • •	s. d. 2 0 1 10½ 1 9 1 8½ Above, less 12½ per
1n bulk		cent, to wholesalers, delivered. £132 per ton, ex works, for minimum 1-ton lots.

NICOTINAMIDE. — Prices per kilo are: 1 kilo, 123s.; 50 kilos, 115s.

NICOTINIC ACID.—Prices per kilo are 78s, for 1-kilo and 70s, for 50-kilo lots.

Nikethamide. — Prices per kilo are:—1-kilo, 115s.; 50-kilos, 107s.

STEARATES.—Prices for minimum 1-ton lots are as follows:—ALUMINIUM (all grades), £232 per ton; CALCIUM (precipitated), £210; LEAD (30 per cent.), £247; LITHIUM, ordinary quality, £439; MAGNESIUM, £231; ZINC £233.

Crude Drugs

Aconite. — Spanish napellus is 3s. 2d. per lb., duty paid, ex wharf.

AGAR. — Kobé No. 1 on the spot is 19s, per lb.

BALSAMS.—Quotations (per lb.) are:— Canada: New-crop 22s, 6d., spot. Copaiba: Soluble Para, spot, 12s. Peru, to arrive, 9s., duty paid. Tolu (genuine as imported) 18s, 6d., spot.

Buchu. — New-crop for shipment is 1s. 9d. per lb., c.i.f., and 2s. for spot.

CARDAMOMS. — Aleppy September-October lb., c.i.f. and 9s. 6d. for spot.

CASCARILLA.—Siftings are 1s. 3d. per lb., spot, and quillings, 1s. 6d.

CASCARA SAGRADA.—New-crop offers for shipment at 235s, per cwt., c.i.f. for September shipment. A parcel now landing is offered at 290s., duty paid.

CASSIA BARK.— Whole on the spot is about 95s, per cwt., in bond, and for forward delivery, 82s. 6d., c.i.f. Broken, 67s, 6d. in bond, and 62s. 6d., c.i.f.

CINNAMON.—Ceylon for shipment (c.i.f.), OOOO, 2s. 7½d.; OOO, 2s. 6½d.; OO, 2s. 5½d.; O, 2s. 3½d.; firsts, 2s. 0½d.; seconds, 1s. 11½d.; thirds, 1s. 10¾d.; quillings 1s. 4¼d.; featherings 10¾d.; chips, 5¾d, per lb.

COLCHICUM.—Corms on spot are offering at 2s. 3d. per lb., and seeds, 6s.

ELEM1.—Offers are from 1s. 6d. per 1b. landed, duty paid.

ERGOT. — Portuguese for shipment is 25s. per lb., c.i.f., nominal.

GALANGAL.—Spot material is dearer at 97s. 6d. per cwt. with forward offers unchanged at about 80s., c.i.f.

GUM ACACIA. — Kordofan cleaned sorts on the spot are 98s. per cwt.; afloat, 96s. 6d.; and for September shipment, 88s.

IPECACUANHA. — Very firm. Columbian is now 42s. 6d. per lb., c.i.f. Matto Grosso, 45s., c.i.f., prompt shipment; 47s. 6d., spot. Nicaraguan for shipment is 46s. per lb., c.i.f., nominal, and spot, 48s. 6d.

Lanolin,—B.P. anhydrous is £175 per ton and hydrous, £155.

LIQUORICE.—Natural whole root, spot; Anatolian, 55s. per cwt.; Russian, 38s.; Syrian, 40s. to 42s. 6d. Block juice quotations are 185s. per cwt., delivered. Turkish stick is 240s. and Italian stick, 475s. per cwt., both duty paid.

Menthol. — Brazilian is 37s, per lb., and Chinese, 37s, duty paid, spot. Shipment (c.i.f.): Brazilian, 35s., Chinese, 31s.

Papain.—Spot values for East African grade one are 34s. per lb., and grade two 31s. per lb.

RHUBARB, Chinese. — Spot offerings include: round Shensi at 12s. 3d. per lb.; rough round high dried, sound at 8s, 6d. and wormy from 3s. 6d. to 6s.

SENEGA.—Quiet. Offers for September-October shipment are 14s, 9d, per lb., c.i.f., and for spot material, 15s. 3d.

SERPENTARIA.—Root is offered at 40s. per lb. on the spot.

SHELLAC.—Firm. Spot quotations are:—F.O.T.N., pure, 257s. 6d.; F.O. standard No. 1, 262s. 6d.; fine orange. 265s. to 290s. per cwt., cx-London warehouse.

SEEDS.—ANISE.—Spot, Cyprian is 140s. per cwt.; Turkish, 140s., duty paid, and 135s., in bond. Caraway. — Dutch is steady at 83s. 6d. per cwt., duty paid in London. Celery. — Indian is quoted at 1s. 11d. per lb., spot London. Corian-

DER.—Quiet. Spot, Moroccan, 60s. per cwt., duty paid, and 55s., in bond. English is 70s. Morocco quoting 50s. per cwt., c.i.f. London, for prompt shipment. CUMIN.—Quiet. Spot quotations are:—Cyprian, 135s. per cwt.; Maltese, 155s.; Moroccan, 152s. 6d., duty paid. DILL.—Indian is 85s. per cwt., spot London. FENNEL.—Unchanged with sellers of Indian at 177s. 6d. per cwt., spot London. FENUGREEK.—Moroccan quoted at 47s. per cwt., duty paid, in London. MUSTARD.—English, 62s. to 80s. according to quality. DER.—Quiet. Spot, Moroccan, 60s. per cwt., duty paid, and 55s., in bond. ing to quality.

TURMERIC.—Firm. Spot, Rajapore now quoted at 110s. per cwt. Madras finger is about 112s. 6d. per cwt.

is about 112s, 6d, per cwt,

WAXES. — BEES, — Dar-es-Salaam spot,
425s. per cwt., September-October shipment, 400s., c.i.f.; Sudanese and Abyssinian, 365s., c.i.f., spot, 420s., duty paid;
Benguella, 370s., c.i.f., and 420s., duty
paid. Candellla,—Spot is 635s. per cwt.
Carnauba.—Prime yellow on the spot is
1,220s. per cwt.; afloat, 1,190s., shipment 1,150s., c.i.f.; fatty grey is 920s.
on the spot; shipment, 875s., c.i.f.
Montan. — Reibeck crude on the spot
is 125s. per cwt. Ouricuri.—Spot 0.5 per
cent. impurities, 715s. per cwt.—Spermacetti.—Case lots are 1s. 9d. per lb. upwards as to quantity. wards as to quantity.

Essential and Expressed Oils

ANISE. — Spot supplies are offered at from 5s. 6d. per lb.; forward, 5s. 3d., c.i.f. BAY.—W. Indian is 8s. 6d. to 9s. per lb. on the spot.

CAJUPUT. — Spot supplies are 17s, 6d. per lb. Forward offers are about 14s., c.i.f.

CARDAMOM. - Price per lb. is about 265s.

CASTOR. — In minimum 2-ton lots the price of pharmaceutical quality for prompt delivery is £186 per ton, naked, ex mill. Forward: October, £166; November-December, £156. Firsts are £6 per ton lower throughout.

CITRONELLA, — In original drums prices (per lb.) are:—Ceylon, spot, 3s., and shipment, 3s. 1½d., c.i.f.; Java, spot, 3s. 10½d., in bond, and shipment, 3s. 9d., c.i.f. Formosa, spot, 3s. 8d. in bond and 3s. 5d. if

CLOVE.—English-distilled bud is about 70s, per lb, for 5-cwt, lots. Madagascar leaf is 9s, per lb., duty paid, and 8s. 4d., c.i.f., for shipment, B.P. is offered at 17s. 6d per lb. 17s. 6d. per lb.

LEMONGRASS. — East Indian is 6s. 8d. on the spot and 6s. 5d. per lb., c.i.f.

ORANGE. - Spot offers for

vary as to quality and quantity from 9s. to 10s. 6d. per lb.

ORIGANUM.—In original containers the price is 14s, per lb.

OTTO OF ROSE.—Anatolian is offered on the spot at 240s. per oz., and Bulgarian, 480s., nominal, ex warehouse.

PALMAROSA. — East Indian is from 42s. 6d. per lb., on the spot, and 36s., c.i.f.

PATCHOULI. — Penang for shipment is again dearer at 52s. 6d. with spot offers at 57s. 6d.

Pennyroyal. — Quotations are about 12s, per lb., duty paid.

PETITGRAIN. — Paraguay on the spot is from 17s. per lb., and for shipment, from 16s. 3d., c.i.f.

PEPPERMINT. Arvensis: Chinese is PEPPERMINT. — Arvensis: Chinese is about 24s. per lb. spot and 21s. 9d., c.i.f., prompt shipment; Japanese, 26s. spot and 25s., c.i.f.; Brazilian (50 per cent.), 15s. 6d. spot and 14s. 6d., c.i.f., for 40 per cent. (50 per cent. not offering). Italian "Mitcham" type oil is 49s. to 52s. 6d. per lb. as to cuplify. forward Italian "Mitcham" type oil is 49s. to 52s. 6d. per lb., as to quality; forward from 47s. 6d., c.i.f.

ROSEMARY. — Spanish oil on the spot is about 5s. 9d. per lb., duty paid, for B.P. quality.

RUE.—Spot offers are about 15s. per lb.

STUDENTS' THIRD INTERNATIONAL CONFERENCE

Social Functions and Business Sessions

THE third international pharmaceutical students' conference attended by 160 students was held in Leiden, Holland, from August 10-20. Students from Australia, Austria, Belgium, China, Birtain, Indonesia, Italy, New Zealand, Norway, Nigeria, South Africa, Southern Rhodesia, Spain, Sweden, Switzerland, the United States, Western Comment West Indias Viscolarist the Germany, West Indies, Yugoslavia, the Universities of Montreal and Alberta in Canada, the Universities of Bombay and Benares in India, and the Netherlands, were present.

The programme included a reception at the Town Hall by the burgomeister, a trip through Leiden, an ex-cursion to the University building and botanical gardens, social evenings, visits to N.V. Organon in Oss, Philips Roxane in Weesp and Brocades in Meppel, a symposium on pharmaceutical advantagement of the control of the contr tical education, a visit to Alkmaar cheese market and the Zuyder Zee works, to Amsterdam, including a boat trip through the canals, the dansant aboard ship during a boat trip on the Kaag, and Brasem (by kind invitation of the Royal Dutch Pharmaceutical Society), films offered by the Specia and Regeringsvoorlichtingdiens, sightseeing through the eastern parts of the

dance. In addition to the social events. there were executive and council meetings and the general assembly. Decisions made at the council meetings were, where necessary, presented to the general assembly for ratification.

Netherlands, and a farewell dinner and

The general assembly was held in the main lecture hall of Leiden University on August 18, and was addressed by Professor Dr. G. H. Vogelenzang (the director of the Leiden Pharmaceutical Laboratory), and by Professor van Os (vice-president of the Fédération Internationale Pharmaceutique). At the general assembly a new executive for the next two years was elected. The chairmen of the committees are now on the executive, whose members are:— Messrs. Sidney J. Relph, Great Britain (president); Roger Duhalde, France (vice-president); Benno Hanebeck, Germany (secretary-general); Heinz Mittelboek, Austria (treasurer); Renato Kramer, Switzerland (chairman for student exchange); Miss Brita Nordenholm, Sweden (chairman for education); and Mr. Arnold L. Solomons, New Zealand (chairman for information).

Three commissioners for promoting membership of the I.P.S.F. in their membership of the I.P.S.F. in their areas were appointed. They are:—
Messrs. L. Rudd, Australia, for Australasia and the South Pacific; Francisco Luis Medina, Spain, for South America; J. N. Banerjee, Benares University, for India and E. Asia.

Spain and Yugoslavia were admitted as full members to the LPSE.

ted as full members to the I.P.S.F., and the Universities of Benares (India), Wisconsin (U.S.A.), Montreal and Alberta (Canada) were admitted as associate members.

The subject of student exchange was discussed at length. There are two main categories of students:— Those wishing to work in a pharmacy for a period of three to six months; and those wishing to observe the work of a pharmacy during a short holiday of up to one month, or to observe the pharmaceutical students' way of life in another country. Applications by students are carefully considered by the I.P.S.F. bearing in mind language, ability and whether the student is suitable and qualified to do the work. An appeal was made to all pharmacists prepared to receive a student from another country, to contact the British Pharmaceutical Students' Association's liaison secretary (Mr. W. W. Dowling, c/o B.P.S.A., 71 Great Russell Street, London, W.C.1). It was stressed that the only way in which the scheme could succeed was with the co-opera-tion of the pharmacist It was understood that it was not easy for the pharmacist to receive and tutor students, but it was emphasised that only students with a certificate of competence from the head of their department were considered for student exchange.

A symposium on pharmaceutical education was held and a report on education in seventeen countries was read and discussed.

The constitution was revised according to English Law, which is official. English is the official language with French, German and Spanish having equal status in matters of correspon-

A decision to hold the next camp in Germany was made and the German delegate outlined plans for that. It is proposed to spend five days in Frankfurt and then to fly to Berlin for the second five days. The council meeting will be held in Berlin. The date of the second five days. camp has yet to be fixed but it will be during the first half of August. A tour on the Rhine and to the nearby mountains, visits to several industries and other sightseeing is proposed. The cost of the camp is expected to be about £12 sterling. The chairman of the organis-ing party (Mr. Karl-Heinz Froming) was co-opted to the executive. Plans for the 1955 conference which will be held in Vienna and Salzburg

are being prepared.

At the final dinner a telegram was sent to Her Majesty Queen Juliana of the Netherlands and the president received a most gracious reply. Although the conference was attended only by pharmaceutical students, and their problems only were discussed, it was most successful and a firm understanding between students of all nations was achieved.

WORLD TRADE

Brazilian Export Regulations.—Further regulations for the sale abroad of certain goods including carnauba wax have been laid down by the Superintendency of Currency and Credit. Export sales of carnauba wax may made at the price paid by the Production Financing Commission plus 5 per cent.

Argentine Import Licences, — The Argentine Central Bank has granted import licences totalling 220 million pesos for goods from Great Britain, Japan, Italy, Switzerland, Germany, Brazil, Sweden, Austria, France, Norway, Finland, and the United States. Among the goods included are photographic material, surgical instruments, industrial chemicals and dyes.

West German Chemical Industry. Sales of the West German chemical industry in the first half of 1953 amounted to about 5,200 million marks, or 10 per cent, more than in the comparable period of 1952. Manufacturers of photographic chemicals reported a specially sharp rise in proreported a specially sharp rise in production. Output was valued at 15,700,000 marks, about 3,500,000 marks more than the six-month average for 1952.

German Firm's Rising Sales. Farbenfabriken Bayer A.G. at Leverkusen, the largest of the successor companies of the former I.G. Farben chemical combine, expects that its total sales this year will exceed 1,000 million marks. Sales in the first half of this year amounted to 483 million marks, about 12 per cent, more than in the same period last year. Exports accounted for 34.6 per cent, of the total turnover. The production capacity of the firm's individual plants, taking 1938 as 100, is now 182 in Leverkusen, 182 in Elberfeld, 140 in Dormagen and 240 in Uerdingen. The company's net profit for 1952 was 15,620,000 marks. A 4 per cent. dividend is proposed.

French Import Reduction Planned.-The French Minister of Finance and Economy is to submit further proposals to reduce French imports to a future Councils of Ministers. The proposals would involve increased import duties on certain luxury goods and a reduction in imports of certain other non-essential products. The Minister will also suggest a number of measures to increase exports, with a view to reducing the French payments deficit. They will include the granting of certain credit facilities to exporters, further tax exemptions and changes in the present export aid.

WILLS

Mr. T. Welsh, M.P.S., Sunnyside, Grange Road, Moffat, left £9,136.

MR. W. SHIELD, M.P.S., Delacour House. Clifford Road, Stanley, co. Durham, left £1,197 (£1,128 net).

MR. H. C. JENKINS, M.P.S., 190 Broadhurst Galdens, London, N.W.6, left £10,948 (£10,286

MR. J. R. STUBBS, M.Sc., F.R.I.C., 7 Halkyn Avenue, Liverpool (late County analyist for Lancashire), left £4,051 (£3,863 net).

DEVELOPMENTS IN THE PRINT AND PUBLICITY UNITED STATES

A NEW antiseptic and deodorising agent that is said to be effective against 98 per cent, of skin bacteria has been introduced for use in a range of products by the Hilton-Davis Chemical Co., Cincinnati, Ohio, Marketed under the name Lorothidol, it is chemically 2,2¹-thiobis (4,6-di-chlorphenol), has been developed by the Sterling-Winthrop Research Institute. The compound is described as having good adherence to the skin, so that it does not wash off; negligible toxicity; absence of odour permitting easy combination with perfumes; and no sensitising effects on the skin.

The Monsanto Chemical Co. claim to have developed "the first practical completely chemical method" for producing cortisone. The process gives promise of "unlimited supplies" of cortisone, but time will be required to translate laboratory findings into full-scale plants capable of producing the synthetic hormone in commercial quan-

A useful negative discovery has been made by the cancer commission of the California Medical Association. It is that the liver enzyme arginase, for which "near miraculous results" in the treatment of cancer have been claimed, is useless for that purpose. After two years' experimental work the commission reported one hundred per cent. failures.

TRADE MARKS

From the "Trade Marks Journal," August 26

For detergents (3)
ATA, 704,971, by Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany.

For all goods (3)

TUTHANNALE, 719,594, by Clinical Products, Ltd., Richmond, Surrey,

For medicated cachets for use as sedatives and tonics (5)

NO-HED, B702,318, by William Ernest Entwistle, Belfast, Northern Ireland.

For medicinal preparations containing vitamins and minerals (5)

VI-AQUAMIN, 715,997, by U.S. Vitamin Corporation, New York, U.S.A. For pharmaceutical preparations excluding medi-

cated confectionery (5) CAREFIR, 716,528, by Goya, Ltd., London, W.1.

For pharmaceutical preparations (5)

PERMAPEN, 717,409. by Chas. Pfizer & Co., Inc., New York, U.S.A. FYDAL, 717,893, by Boots Pure Drug Co., Ltd., Nottingham. Inc., New York, U.S.A, FYDAL, 717,893, by Boots Pure Drug Co., Ltd., Nottingham. EGMYTA, 719,250, by Pierre Paul Placide Astier, Paris, Francé. TRILLETS, 719,591, by the Wellcome Foundation, Ltd., London, N.W.1. SOBODIN, 719,657, by Bengué & Co., Ltd., Alperton, THEVILINE, 719,886, by Neodrog, Courbevoie, Seine, France.

For insecticides (5) HEXASTAN, OKTASTAN, 718,006-07, by the Standardiscd Disinfectants, Co., Ltd., London, S.W.1. FYPAK, 719,627, by Stanley Z. Jackson (Chemists), Ltd., Castleford.

For medicated confectionery (5) SKIDDAW BRAND CONFECTIONERY, B718,089, by John Jowett, Morecambe.

For analgesic preparations (5) DISPRIL, 718,967, by Reckitt & Colman, Ltd.,

Booklets and Leaflets

Croda, Ltd., Croda House, Snaith, Goole, Yorks: "A Complete Description of the Seven Standard Grades of Croda Lanolin,"

EXTERNE Co., Ltd., 20 Sloane Street, London, S.W.1: "An Introduction to Externe," pp. 8.

PIFCO, LTD. Watling Street, Manchester: Beauty and Good Health," pp. 12.

Periodicals

GLAXO LABORATORIES, LTD., Greenford, Middlesex: "Glaxo Topics," No. 1, August 1953.
The first issue of a quarterly bulletin for retail pharmacists.

INNOXA (ENGLAND), LTD., 1 Eden Street, London, N.W.1.: "The Innoxa Approach," September 1953.

Parke, Davis & Co., Ltd., Staines Road, Hounslow, Middlesex: "Parke, Davis Bulletin," low, Middlesex: "I No. 3, 1953, pp. 12.

THE BRITISH TABULATING MACHINE CO., LTD., 17
Park Lanc, London, W.1: "The Tabulator,"
No. 80, p. 32. Presents an overall picture of work in Government departments in which electro-mechanical punched-card equipment is

Medical Propaganda

Manufacturers' leaflets, folders, booklets, etc., directed to doctors but available to pharmacists.

ROCHE PRODUCTS, LTD., Welwyn Garden City, Herts: "Roche Research" (blotter); "Der-matology" (16-p. booklet).

PHARMACEUTICAL SPECIALITIES (MAY & BAKER)
LTD., Dagenham, Essex: "The Problem of
Insomnia" (6-p. folder on Soneryl); "Avomine" (blotter).

Price List

MALLAGH & Co., 12 High Road, South Woodford, London, E.18: Price list of perfumery essences.

Advertising Campaigns

CAMILATONE, LTD., Edgware Road, Welsh Harp, London, N.W.9: Intensive advertising in over twenty large-circulation women's magazines for Camilatone Tonrinz.

GENATOSAN, LTD., Loughborough, Leics: Halfpage Christmas advertisement in the Daily Express on December 17 for Paul Gay per-

PROGRESS SHAVING BRUSH CO., LTD., Progress Works, Mottram Street, Stockport, Ches: Vulfix shaving brushes are nationally advertised in national and provincial daily Press and in Punch.

SPA BRUSHES, LTD., Chesham, Bucks: National advertising for Spa Sparklon tooth-brushes.

MEGGESON & Co., Ltd., Lleyellyn Street, London, S.E.16: Larger national advertising cam-paign for Meggeson, bismuth dyspepsia tablets starts in the week ending September 5.

COMING EVENTS

Items for inclusion under this heading should be sent in time to reach the Editor not later than first post on Wednesday of the week of insertion.

Monday, September 7

CHEMISTS' EXHIBITION, Old Hall of the Royal Horticultural Society, Vincent Square, Westminster, London, S.W.I. Opening ceremony by Mr. T. Heseltine (president of the Phar-maceutical Society) at 11.30 a.m. Exhibition open until September 10.

Wednesday, September 9

IRISH CHEMISTS' GOLFING SOCIETY, Elm Park golf club. Fixture.

CHEMIST AND DRUGGIST DAILY BULLETIN

Produced in honour of the ninetieth meeting of the BRITISH PHARMACEUTICAL CONFERENCE, London, 1953

TUESDAY, SEPTEMBER 1



ABOVE: "Signing on" at the Conference headquarters. BELOW: A contingent from Northern Ireland: Messrs. C. A. Quinn and J. A. B;own; Mr. and Mrs. C. L. Gordon-Rattie; Mr. and Mrs. W. J. Moffett; Mr. W. A. Boyd, all from Belfast; and Mr. S. E. Campbell, Londonderry.



Opening Session

WELCOME TO OVERSEAS VISITORS

THE ninetieth meeting in the series of British Pharmaceutical Conferences was formally opened by the president of the Conference, Mr. T. Heseltine (president of the Pharmaceutical Society of Great Britain), in the flower-decked ballroom of Grosvenor House, London, at 11 a.m. on August 31. With Mr. Heseltine on the platform were the Conference chairman (Dr. G. R. Boyes), the vice-chairman of the London County Council (Mrs. I. M. Bolton), and officers and committee members of the Conference.

Mr. HESELTINE, in his welcome to members to the Conference, mentioned specially the fifty or sixty members from overseas and paid tribute to the work that the committee and subcommittees had done in making prepara-tions for members' well-being and happiness.

L.C.C. Hospitality

The London County Council, in whose area the Conference was being held, had, he said, placed at the dis-posal of the Conference one of its most important buildings, and had done honour to the Conference by sending its vice-chairman to the opening session. Mrs. Bolton, an alderman of the L.C.C., was specially interested in education and hospital work, and it was in her constituency that the first health centre in Great Britain had been

MRS. BOLTON acknowledged the remarks of the president. On behalf of the L.C.C. she extended a welcome to all members, again with special mention of those from overseas. She congratulated the Conference, which was celebrating its ninetieth birthday dur-ing the present year, on being a "most useful and energetic nonagenarian." Pharmacy did not often attract the limelight but its practitioners were the "back-room boys of the National Health Service." When she penetrated to the pharmaceutical departments of

Mrs. Bolton's words of welcome were acclaimed by her hearers.

Mentioning that the meeting was that of the British Pharmaceutical Conference, and not, as was occasionally thought, of the Pharmaceutical Society, THE PRESIDENT handed over the Conference to its chairman, whom he described as a man easy to get to know and "the better you get to know him the better you like him." He was held in great respect by all who walked in his circle.

Dr. Boyes then delivered his address as chairman (sec p. 235).



WEST MEETS EAST: United States pharmacists Mr. D. Purdom, Baltimore; Miss G. Stockert, Long Branch, New Jersey; and Miss V. E. Heyer, Wisconsin, meet Mr. C. Abou-Chaar, from Lebanon in the Middle East,

hospitals she found them to be a "hive of industry often in cramped industry often in cramped lit quarters." Out-patients, and under-lit quarters." the only patients with whom pharma-cists came into direct contact, saw pharmacists only through "a hole in the wall." The medicines they received, however, were always delivered with meticulous instructions as to use.

Mrs. Bolton said she realised that pharmacists' work was much more than the dispensing of prescriptions, and included constant research to the benefit of the public.

A vote of thanks to the chairman for his address was moved by Professor MACDONALD, who said that Dr. Boyes in his address had given a synthesis of min address had given a synthesis of pharmacy, pharmacology, and clinical methods; it was "full of meat"—admirable in manner and matter. The year had been a year of great sorrow to the chairman, as well as of pride in his election, to his present office. in his election to his present office. Conference members gave him their gratitude, sympathy and great affection.



VISITORS FROM BELFAST: Messrs. W. Gorman and H. W. Gamble, with Mr. Gamble's daughters Hilda and Doreen. At right, Mr. S. Kumar Agrawal (president, 1953, of the British Pharmaceutical Students' Association).



Mr. and Mrs. D. W. Hudson with Lady Linstead.

Dr. C. H. HAMPSHIRE, seconding the vote of thanks, described the address as "informative to the mind and uplifting to the spirit." It was a masterly survey of the advances in therapeutics.

The vote was carried with acclamation, which DR. BOYES acknowledged.



CONFERENCE CHAIRMAN'S ADDRESS

THE PHARMACIST AND THERAPEUTICS

HE British Pharmaceutical Conference was founded in 1863 through the foresight of men who had the scientific development of pharmacy at heart. A major step towards the advancement of pharmacy was taken shortly before the first full meeting of this Conference, with the publication of the first British Pharmacopæia. The hope expressed by Henry Deane (president of the Conference for that year) that members of Conference would do all they could to promote an improvement in every to promote an improvement in every future edition has been abundantly realised. The eighth British Pharmacopœia (1953) becomes official tomorrow [September 1] and a new edition of the British Pharmaceutical Codex is expected to be published next year. It is appropriate at this stage year. It is appropriate at this stage that we should review some of the contributions which have been made by pharmacy to the materia medica of

Pharmacists' Rôle in Hospital Service

A memorandum issued in 1952 by the Pharmaceutical Society to the Minister of Health included the following among the services that should be rendered by the pharmaceutical de-partment of a hospital:—To obtain and be responsible for the nature and quality of drugs, etc.; to make preparations and to formulate preparations to meet special needs; to dispense prescriptions; to assist in the development of new methods of treatment; to advise upon the nature and properties of substances used in medicines, and upon their selection. That definition of the functions of a pharmacist is applicable in whatever branch of the profession he is engaged. In order to carry out those functions the pharmacist must have a thorough knowledge of the chemical and physical properties of the substances comprised by the materia medica of to-day, he must be familiar with the analytical methods used in their assay and be able to apply the principles involved in their formulation. To this must be added a basic knowledge of physiology and pharmacology to provide the background for advice upon prescribing those functions the pharmacist must advice upon prescribing

advice upon prescribing.

One of the outstanding features of pharmacy and medicine to-day is the wide use that is made of synthetic substances, and of isolated active principles. At the meeting of the Conference held in Liverpool in 1896, the president (William Martindale) described the introduction of synthetic compounds as a novelty. Twenty years later, C. A. Hill in his address as president stated, "Notwithstanding the phenomenal extent to which synthetic drugs have come into use, and despite the increased employment of active principles according as our knowledge of these progresses, the use of the

drugs themselves in the form of galenical preparations (whether "standar-dised" or not) continues to a remarkable and perhaps significant extent. Furthermore, signs are not wanting of a growing recognition of the truth that many a drug and many a food may contain valuable properties not readily determined by chemical methods. may be only slowly that the full value of a drug discovered empirically can be stated in scientific terms. Paradoxical as it may seem, the tendency



Dr. G. R. Boyes

to-day, with advancing scientific knowledge, is to recognise the failure of the active principle to replace the parent drug." Since these words were spoken, there has been a definite change from nature to the laboratory as the principal source of medicinal substances. That has effected changes in the practice of the front the practice of tice of therapeutics and pharmacy.

Statistics of Expansion

Some idea of the growth of the industry engaged in the production of synthetic chemicals and isolated principles and of its importance to the life and health of the nation, can be gained from figures published in the Final Report of the Census of Production for Drugs and Pharmaceutical Preparations for the year 1948. During the ten years preceding the year of the Census the number of persons employed in Britain in the industry almost doubled, and its gross output more than trebled. The output of aspirin rose from 2 to $5\frac{1}{2}$ million lb. The production of insulin increased to six times the prewar amount to a total of 4½ million

units per annum. In 1948 the production of barbituric acid and its derivatives amounted to 90,000 lb.; the annual production of sulphonamides was approximately 890,000 lb. The production of chloral hydrate was nearly 250,000 lb., and of sex hor-mones 25,000 oz. Since 1948 there has been a continuous increase of production in volume as well as in value. The production of penicillin, which was only at the rate of 190,000 mega units per week in 1948, rose to almost 1,300,000 mega units per week by 1952. In that period, too, new drugs such as streptomycin, PAS and the histamine antagonists have all added to the total production which is now valued at approximately £90 million per annum. Of that approximately one-third is exported overseas.

Contribution to National Welfare

The contribution made by pharmacy to the national welfare is revealed in its true perspective, however, only when it is examined in the light of those other factors which have influenced medical progress during recent years and the advances in other branches of scientific endeavour which have been adapted to the requirements of the pharmaceutical laboratory.

On the one hand there has been the awakening of the national conscience to the need for the prevention of disease, and the care of the sick, reflected in the gradual evolution of the public health service. On the other hand there has been the increasing attention given to Planned and organised reresearch search for the development or improvement of products is now accepted as essential to the progress of pharmacy. Manufacturers must follow very closely the discoveries made by workers in academic centres and be ready always to adapt their methods and their products to the ever advancing flow of knowledge.

The discovery of a new drug with specific therapeutic properties is seldom due to mere chance, but is often the result of carefully planned and coordinated research to which organic chemists, biochemists, pharmacologists, physicians and pharmacists have all contributed. That research may consist of the routine "screening" of the biological properties of a series of known compounds, or it may be a deliberate attempt to build molecules of predictable pharmacological action. It is often necessary to examine scores, or probably hundreds, of compounds. Some guidance in the search for new compounds can be obtained from the systematic examination of naturally substances and synthetic occurring compounds of known pharmacological properties and known chemical structure. The preparation of a series of homologous compounds or derivatives

based on the original primary struc-ture and a quantitative study of their biological properties must be under-taken in order to find one which possesses a high degree of specific biological activity with only a minimum of unwanted or toxic side effects.

Renewed Interest in Botanicals

It must not be inferred that vegetable materia medica have been entirely supplanted by synthetic products. Some examples can be quoted to show that this is far from being the case. There has recently been a revival of interest in the peripheral vasodilator action of preparations of Veratrum viride as a means of treating hypertension, and in the dilator effect on the coronary vessels of preparations of Ammi visnaga for the relief of angina of effort. Those possible clinical applications have led to systematic chemical and pharmacological examination of the constituents of these two drugs, resulting in the case of Vera-trum viride in the preparation of a stable extract, and, in the case of Ammi visnaga, in the isolation of khel-lin. Liquorice has assumed an importance above that of a demulcent and sweeting agent by the discovery that glycyrrhizinic acid has a pharmacologi-cal action on salt and water metabolism closely simulating that of deoxy-cortone. We are still dependent upon opium for supplies of morphine, on cinchona for supplies of quinine, on ipecacuanha for emetine. Some of those strongholds are already being assailed by the synthetic organic chemist: the synthesis of morphine on a laboratory bench scale has recently been accomplished. The industrial adaptation of the metabolic activities of some micro-organisms has made these members of the plant kingdom important contributors to the materia medica. Moulds and fungi grown under controlled conditions in suitable culture media produce antibiotics: Aspergillus niger grown in a medium containing molasses produces citric acid.

Substances developed in the animal body-hormones, antitoxins, human blood and plasma—are important items of materia medica. The production of antitoxins contained in the serum of animals, has long been a specialised part of pharmaceutical enterprise. Interest in some of the antitoxins may be renewed, in view of the prevalence of strains of bacteria resistant to the commonly used antibiotics and chemotherapeutic compounds. Of the hormones produced by endocrine glands, cortisone and corticotrophin have assumed great importance in therapeutics, although their production in this country is not yet large enough to satisfy all requirements. Cortisone is one of many steroids secreted by the cortex of the adrenal gland. Cor-ticotrophin (adrenocorticotrophic hormone or ACTH) is obtained from the anterior lobe of the pituitary gland of pigs, cattle and sheep. Despite the inherent difficulties of the process of ex-tracting the active principle from the

glands, considerable progress has been made towards its isolation in pure condition. It is just thirty years since the first commercially produced injections of insulin were made available in Great Britain. In the intervening years much research has been directed to so modify the original soluble insulin as to prolong its action in the body after injection. Successive steps towards the achievement of that objective have been protamine insulin, protamine zinc insulin and globin insulin. During the past few years, workers in several laboratories have reinvestigated the effect of zinc ions on the crystallisation of insulin. The most recent development has resulted from the discovery that if an acetate buffer is substituted for the phosphate or citrate buffer previously used for making insulin suspensions, it is possible to precipitate the insulin over a range pH approximating to that of body fluids by the addition of an amount of zinc equivalent to that present in protamine zinc insulin.

Three years after the introduction of insulin, therapeutics registered another significant and life-saving advance in the discovery of the effectiveness of raw liver in the treatment of pernicious anæ-mia. It was not long before extracts containing the active substance or sub-stances were produced, but progress in this field was hampered by lack of knowledge concerning the identity and nature of these active substances and by the fact that there was no laboratory method by which the activity of liver extracts could be assessed. It was the application of chromatographic methods of separation and the development of a microbiological method of assay that provided the means for the isolation of the substance now called cyanocobalamin, in a yield of less than gm. from four tons of liver. discovery that cyanocobalamin is produced by Streptomyces griseus as a metabolite together with streptomycin opened up a new source for commercial production in greater quantity and at less cost.

Characters and Tests

For a substance to be suitable for use in therapeutics it is essential that pharmacological and therapeutic activity must not vary from batch to batch. During the development of a synthetic compound, or the purification of an active principle extracted from its natural source, much information is gained about its physical and chemical characters; from such data it is possible to draw up specifications of characters and tests by which the substance can be identified and analysed. The separation of active constituents from their natural sources, and the purification and characterisation of synthetic organic chemicals, have been greatly assisted by refinements in methods of chemical and physical analysis. Many of the newer techniques involve the use of costly physical instruments, with the result that the analytical control of medicinal

substances is becoming the work of the specialist and the capital expenditure needed to instal equipment in a laboratory reaches astronomical amounts. Among the newer techniques which have been employed in the development of new preparations and in the assay of old ones are spectropho-tometry, chromatography and polarography. Absorption spectrophotometry in the infra-red region is now assuming importance both for qualitative and quantitative analyses and for providing information about chemical constitution. It was used, for example, in elucidating the chemical structure of cyanocobalamin and of the penicillins. Chromatography has greatly assisted the isolation and purification of many antibiotics. It has provided methods for the separation of noradrenaline from adrenaline; for the fractionation of digitoxin from admixture with other digitalis glycosides and aglycones. The use of a suitable ion exchange resin as the adsorbing column makes it possible to separate the salts of weak organic bases into their component ions. This method has been used for the determination of some alkaloids and local anæsthetics.

Polarography gives satisfactory results in the routine assay of morphine, diamorphine, strychnine and riboflavine in injection solutions, tablets, and some galenical preparations. It may also be used for the assay of trace metals in pharmaceutical preparations, and for the determination of iron, arsenic and

antimony in their compounds.

Biological Standards

It is possible to guarantee chemically or physically a constant degree of pharmacological activity from a given weight of most drugs. There are, however, some drugs, mostly of biological origin, which cannot be reduced to a state of uniform chemical purity. The biological activity must be controlled by biological assay. Biological assay is required for about 30 substances of the British Pharmacopæia. A laboratory, properly staffed and equipped, where biological assays can be carried out, is therefore an essential auxiliary pharmaceutical manufacturing plants. When a new substance is being developed and examined in order to assess its possible therapeutic use, biological tests are of value, in conjunc-tion with chemical and physical methods, as an indication of progressive stages in the isolation and purification of the new substance. Methods of biological assay used in conjunction with chromatography have facilitated the purification of the adrenocorticotrophic hormone, and the isolation and characterisation of adrenal cortex hormones.

Before any new substance can be released for clinical use the pharmacological examination must extend be-yond the demonstration of its specific biological activity in vitro and in vivo. Its rate of absorption, distribution through the body tissues and excretion must be investigated. Information must be obtained concerning its therapeutic



index (ratio of effective, to toxic dose), its chronic and acute toxicities, its action on blood pressure, respiration, the central nervous system, the heart, blood, kidney and liver. If the drug is one that is intended to be used externally its local effects on the skin and mucous membranes must be studied to ascertain whether it causes irritation and sensitisation. If the substance is shown to have a desirable therapeutic property it must be free from serious side effects. All methods of biological assay have one feature in common—individual variability. It is therefore necessary to invoke the assistance of statisticians in order to assess the accuracy of the results and to plan the experiments so that reliable information may be obtained with a minimum expenditure of labour and materials.

Importance of Formulation

A most important part of the pharmacist's work is formulation. Here pharmacy is seen both as a science and an art. A science because a know-ledge of physical, chemical and pharmacological properties of substances is necessary, and an art because it requires the exercise of skill based on experience. Often this part of the pharmacist's work is taken for gran-The aim of formulation must be to present a drug in a form in which it exhibits its characteristic properties, is safe and convenient to use, and stable for a reasonable period of time. During the past decade, the dispensing of penicillin solutions and suspensions for parenteral use, and the formulation of creams and ointments for external application brought into prominence the necessity for observing strict asepsis in manipulation, and revealed numerous incompatibilities which had to be overcome before satisfactory formulation was accomplished. study and solution of these problems has formed the basis of a number of papers contributed to the Science Sessions of this Conference. The survey of the pharmacy of antibiotics presented at our Symposium Session last year gave an indication of the complexity of these problems.

Controlled Trials

When a drug has emerged favourably from the scrutiny of pharmacological examination and has been suitably formulated there arises the necessity for testing it on human patients. Ideally every new drug should be submitted to controlled trial. This method has not always been followed in the past, indeed, it has often not been possible to adopt it. Had it been employed many of the alleged remedies of bygone years would never have seen the light of day. As it is, too many of them have persisted to the present time because of the absence of incontrovertible evidence of their worthlessness. To draw conclusions from insufficient data will lead to erroneous deductions. This error does not belong entirely to a past era. Even today

claims for therapeutic activity are sometimes based on clinical impressions derived from the observation of one or two patients only! Controlled clinical trials have their greatest usefulness when it is possible to measure some biochemical or pathological change brought about in response to the administration of the drug, e.g., the blood sugar response to the injection of insulin or the rise in the number of red blood-cells in response to the injection of liver extract or of vitamin B₁₂. By whatever method the clinical evaluation of a drug is attempted, the process requires careful planning, critical examination of the progress of the patients, and systematic recording of the results. This is essentially the province of the physician but it is one in which the pharmacist, particularly the hospital pharmacist, can and should collaborate. From it will come the final proof of the successful outcome of the chemical, biological and pharmaceutical research that has preceded it.

The quantitative evaluation of drugs in man is usually difficult because it is not often possible to obtain continuous and objective records of the drug effect. Furthermore, the number of subjects, the number of observations and the range of doses that can be used are all nccessarily limited. Where quantitative methods have been devised they have sometimes revealed that the relative potencies of the members of a group of compounds having qualitatively similar pharmacological actions do not correspond to the deductions made from the results of tests on animals. This is true, for example, of the synthetic muscle relaxants.

Overseas Relations

Pharmacy like other sciences knows no national boundaries. Its discoveries and methods are applicable the world over. Its difficulties are common to all those who practise it wherever they may be. There is obvious need for the closest collaboration and exchange of information by pharmacists of all nations. Already there is much evi-dence of the growing recognition of this need. In a world which is rapidly shrinking with the speed of modern travel, we cannot afford to ignore it. The presence in this country during the past summer, and at this Conference, of pharmacists from the Commonwealth and the Dominions as well as from a number of other countries, will do much to foster this collaboration. The International Pharmaceuti-cal Federation, the Franco-British Pharmaceutical Commission, the International Conference on Military Medicine and Pharmacy and the Interna-tional Pharmacy Students Federation all provide opportunities for the exchange of views between pharmacists of different nationalities. The invita-The invitation given to the International Pharmaceutical Federation to meet in Great Britain during 1955 is a welcome step towards the greater partici-

pation of British pharmacists pharmaccutical affairs beyond the shores of our own islands. Also the World Health Organisation is today taking a greater interest in matters of purely pharmaccutical importance especially regarding standard preparations and standard names. In an attempt to extend international agreement on standards for drugs and pharmaceutical preparations, the In-ternational Pharmacopæia has been produced by the W.H.O. expert committee on the unification of pharmacopæias. The British Pharmaceutical Conference has reason to be proud of the fact that one of its vice-chairmen (Dr. C. H. Hampshire, C.M.G.), who was Chairman of our meeting in London in 1933, was Chairman of this expert committee.

A Position of Responsibility

In whatever capacity the pharmacist is engaged he or she has a position of great responsibility in regard to the life and health of the community. Every stage in the preparation of a medicine, from the manufacturing laboratory to the dispensing counter, is subject to rigid control—and by control in this context is meant something more than analytical control. It means constant vigilance, checking and cross checking to avoid errors in manufacturing, compounding and dispensing. Today, although the emphasis is passing from the bottle of medicine to the compressed tablet, capsule and injection solution, and individual prescriptions have been largely replaced by standard preparations, the knowledge of the chemistry and pharmacology of drugs required by the pharmacist is greater than ever befo c. During the lifetime of this Conference therapeutics has emerged from the dawning light of an exact science, Pharmacists can be proud of the part which they have played in bringing about that advance, and they can be prouder still of their responsibilities to further it in the future.



Mrs. E. Neville Brown with Dr. Norman Evers (a former chairman of Conference),

Ladies' Excursion. — Some of the lady members of the Conference visited the General Post Office on Monday afternoon. They were split into parties to see in turn Mount Pleasant, the Central Telegraph Office and Faraday House.

SCIENCE SESSIONS

THE CHAIRMAN opened the Science Sessions in the ballroom of Grosvenor House at 2.30 p.m. on Monday. He added his welcome to the members to that given by the president in the morning (see p. 234) and invited full discussion on the papers to be read. About 120 members were present.

ABSTRACTS AND DISCUSSIONS The first three papers were taken together. They were:

In Vitro Evaluation of Antacids An in vitro method of evaluating antacid consists of adding a specific quantity of an antacid to an artificial gastric juice containing hydrochloric acid and pepsin at body temperature and recording the pH at intervals until the antacid has been neutralised. The quantity of antacid used was that which maintained a buffering action for about one hour. With official substances that was within the limits of official doses (except dried aluminium hydroxide gel the amount of which had to be increased). It was found that those antacids which buffered at the desired range of pH 3·5-4·0 were aluminium hydroxide gel, dihydroxy aluminium aminoacetate and calcium phosphate. Magnesium trisilicate, buffered at ph 3.5-6, bismuth carbonate could not be considered an antacid, and magnesium oxide was an alkalising agent and in use likely to cause acid rebound. A difference in effectiveness between aluminium hydroxide gel and dried gel was demonstrated (the liquid gel is quicker): that difference is not revealed by the B.P.C. acid neutralising test.

The authors are J. Armstrong and Mary Martin (Boots Pure Drug Co.,

Evaluation of Aluminium as Buffer Antacid

A SIMPLIFIED procedure for assessing antacid properties of buffer antacids, particularly of dried aluminium hydroxide gel, is described:

ydroxide gel, is described:

1.0 gm. of sample, passing a 100-mesh B.S.S. screen, is added to 200 mils of water and 3 mils of N hydrochloric acid. The mixture is agitated continuously by mechanical stirrer to maintain a uniform suspension of the insoluble material. The pH of the mixture is determined at intervals of five minutes over a period of thirty minutes, the measurement being made electrometrically via electrodes remaining in situ in the liquid. Thereafter, 1 mil of N hydrochloric acid is added at intervals of ten minutes and the pH determined immediately prior to each successive addition. The procedure is continued for a period depending upon the rate at which the pH falls, and the minimum target set for the particular antacid material under test. The operation is carried out at room temperature. carried out at room temperature,

The authors suggest that if the B.P.C. test for antacid activity of dried aluminium hydroxide gel is to be retained the lower limit for acid absorption should possibly be raised from 200 to

250 mils of 0·1N hydrochloric acid per gm. A test for reactivity on the lines of tests used for aluminium glycinate or aluminium phosphate gel, U.S.P.,

should also be adopted.

The authors are D. N. Gore, B. K. Martin and Mary P. Taylor (Beecham Research Laboratories, Ltd.).



DR. J. M. ROWSON Secretary of the London Committee

Chemical Evaluation of Antacids

To test antacids an artificial gastric secretion consisting of 0.05 N hydro-chloric acid buffered with 0.15 per cent. each of pepsin, peptone and sodium chloride is suggested for the evaluation of antacids. The B.P.C. test is criticised on the ground that it does not imitate conditions in the stomach. To 100 mils of the solution about 20 per cent. excess (for neutralisation) of antacid was added and the mixture was kept at 38° C. and pH readings were taken at intervals. The change in pH, not the final value obtained, was the criterion of the test. The correspondence between pH change and amount of acid neutralised was determined in separate experiments using sodium hydroxide. Aluminium hydroxide gel was found to be more rapid in action than dried gel. Bismuth carbonate was found to cause, in most cases, no appreciable affect on the pH value. For that reason a standard method for testing antacids is considered desirable. Other antacids were tested and the results indicate that the solution used is

a suitable testing medium. The author is H. Brindle (professor of pharmacy, University of Manchester). MR. ARMSTRONG read the first paper, MR. Gore the second and PROFESSOR

BRINDLE the third.

although the lunch did not require an antacid.

THE CHAIRMAN throwing the subject open for discussion suggested that it

was an appropriate one after lunch-

MR. N. L. ALLPORT, London, said that all three speakers agreed that bismuth carbonate had no antacid value, a fact that surprised him and would no doubt surprise others. He had examined many samples of alu-minium hydroxide gel but was worried because there was no official test for detecting sodium carbonate present. Could the author say whether the tests described could be applied to that

purpose. DR. W. MITCHELL, London, pointed ut that although the British out that although the British Pharmacopæia suggested that alumin-ium hydroxide could be made by reacting a magnesium salt with waterglass, it could also be made by reacting magnesia with silica gel. That was more convenient, and commercial pre-

there any difference in the action between those products when examined by the tests described and, in particular,

parations might be made that way. Was

MR. A. W. BULL, Nottingham, asked Mr. Gore whether the low levels noted in his experiments were due to the temperature of the tests being 20° C., against 37° C. in the tests recorded by the other authors. He also thought that there were factors in the manufacture of antacids that affected their efficacy. Could the properties of a compounded mixture be predicted by superimposing the curves of the ingredients? A mixture of magnesium hy-droxide and aluminium hydroxide gel should theoretically have a quick and a prolonged action.

DR. G. E. FOSTER, Dartford, said that figures given in the National Formulary indicated that the daily output of gastric hydrochloric acid could be neutralised by 3 gm. of magnesium oxide, and 136 gm. of bismuth carbon-The present authors had apparate. ently confirmed those figures. then had bismuth carbonate merited such wide popularity as an antacid? Aluminium hydroxide gel made by different methods had different properties.

MR. J. H. OAKLEY. London, pointed out that no official directions were given of the details of how aluminium hydroxide gel was to be made.

nydroxide gel was to be made.

The temperature and order of mixing the reacting solutions and, in fact, the manner of washing the product could alter the texture. Were the differences noted in the dry gel due to empirical factors? How did the addition of other substrates as hearness. tion of other substances, e.g., karaya. affect the action? What would be the effect of adding oils?

Another speaker suggested that bismuth inactivated pepsin while leaving the natural acid content of the gastric juices alone.

MR. C. J. EASTLAND, London, confirmed that there was a reduction in

the neutralising power of aluminium hydroxide gel with prolonged heating, and the amount of reduction was "proportional" to the temperature. For example, if a sample were boiled for five minutes there would be a loss of 75 per cent. in neutralising activity. The effect of storage of the gel at high temperatures—for example in the tropics—needed investigating. He mentioned that authors of a paper published in the Lancet recently had found no evidence of acid rebound after administering sodium bicarbonate and magnesium trisilicate within the period of the test—two-anda-half to three hours.

a-half to three hours.

Dr. E. R. WILKINSON, London, said that he had found that if the gel were dried at 52°C there was a considerable loss of activity, but little loss when dried at 48°C. The source from which the aluminium was derived had an influence on the reaction rate. Other ions often played an important part. On the first paper he wanted to know why a pH value of 1.5 had been chosen. He had used pH I, which was easier to maintain. So long as the materials used were satisfactory, activity could be maintained in storage over many years

age over many years,
MR. C. E. WATERHOUSE, Southport,
mentioned that differing bulk densities,
as well as differing sizes of spoons in
which the medicaments were taken
could have significant effects. Were
the samples used by Professor Brindle
of the light or the heavy type?
On the invitation of the chairman

On the invitation of the chairman the authors of the papers asked questions of each other.

MR. Gore on paper 1 doubted that a pH of 6 or 7 in antacid preparations would not produce an acid rebound. Anything over pH 4 was in fact doubtful, particularly if the preparation were taken by swallowing and not sucking.

In the first part of the antacid reaction hydrochloric acid acted on the sodium bicarbonate content of the preparation. That action continued for over forty minutes. The aluminium curve then "started from scratch," despite the fact that the aluminium preparation had been wet. The action seemed to depend on the strength of the acid.

Alternative Test Wanted

PROFESSOR BRINDLE, said that all three teams of authors wished to propose an alternative test to the official one. He thought they all agreed that a buffer should be present, and that the temperature should be about that of the body. He agreed with Mr. Gore that the end point in the official test was very difficult to obtain when a buffer was present. Something should be officially done about it.

Another speaker suggested to Mr. Gore that water functioned as an introductory phase to get aluminium into

the gastric juice.

MR. ARMSTRONG told Dr. Mitchell that he had examined three or four samples of the aluminium compound, and had found certain differences between them. He told Mr. Bull that at 20°C a lower reactivity was always

found than at 37°C; and DR. FOSTER that aluminium hydroxide gels could be made that showed no antacid effects. The temperature of the preparation, amount of drying, and washing of the gel affected the physical properties.

To other speakers he said that aluminium was known to inactivate pepsin, possibly by forming a complex, and that bismuth might do the same.



MR. F. G. WELLS Chairman of the London Committee

He had found that while heating the gel at 90°C for five minutes destroyed the preparation's activity, heating at 70°C for the same time caused no loss of activity. He told Dr. Wilkinson that all of the samples were commercial. He had chosen pH 1·5 as that was the average of the stomach contents. A pH value of 1 could cause erroneous results. To Mr. Gore he said that the paper in the Lancet might cause a different approach to be made to the problem, but further work was necessary first.

MR. Gore said that there was usually 1 per cent. of sodium bicarbonate and carbonate in the gel; it could be leached out with water. At 37°C he had found always a more prompt action although the final pH was the same. He told Dr. Oakley that the tablet makers' art could be the ruination of antacid tablets.

To Mr. R. L. Stephens, Brighton, he said that an indigestion remedy need not be an antacid, and to Mr. Waterhouse that probably the sample had been dense. He told Professor Brindle that the points were debatable whether the temperature of the test should be 37° and whether it was necessary to have a buffer. The conclusion was the same whether the test was done at 20 or 37°C. He dried his aluminium glycinate by infra-red. He did not think that the effect was caused by a complex, but it was something near it. PROFESSOR BRINDLE said that the figures in the National Formulary quoted by Dr. Foster were responsible for his being on the plat-

form at that moment. In the presence of buffers an almost infinite quantity of bismuth carbonate would be required to neutralise 5 gm. of hydrochloric acid, but by the official type of test the amount ought to be about 30 gm. He told Mr. Bull that the superimposition of curves would provide a good idea of the properties of the mixture; pH 1 was lower than the average gastric secretion.

THE CHAIRMAN thanked the contri-

Aneurine Hydrochloride Stability
POWDERS and uncoated tablets that
had been stored for various periods,
and which contained aneurine hydrochloride, were re-assayed by official
methods. The results indicate that in
such relatively dry media the vitamin
is stable for long periods at pH 4.
Where the pH of a preparation was 4-5
there was a loss of about 10 per cent.
occurring soon after manufacture. The
higher the pH the greater the loss observed. It was found that copper (included in the formulation) had little
effect on the rate of loss (whereas in

The authors are H. Partington and C. E. Waterhouse (Bob Martin, Ltd.). The paper was read by Mr. C. E. Waterhouse.

moist conditions loss was accelerated

MR. N. L. ALLPORT, London, said he had encountered tablets containing ferrous sulphate and calcium carbonate to which aneurine hydrochloride had been added. He had always found that the content of aneurine was lower than that claimed. He was surprised that the authors were satisfied with the storage of dry preparations.

the storage of dry preparations.

DR. K. BULLOCK, Manchester, said that the catalytic action of copper in the presence of moisture had also been noticed in the case of the deterioration of ascorbic acid. Had the authors details of the moisture content of the preparation tested? The pH of a powder was difficult to decide. Had they any conception of how, during storage, the rate of deterioration varied with time?

DR. R. E. STUCKEY, London, asked if, in the tablets tested, the iron was present as ferric ions and thus available for the oxidation of aneurine hydrochloride.

MR. T. D. WHITTET, London, reported "peculiar results" with injections of aneurine. He had made injections by adjusting the pH to a certain figure and then autoclaving. Products so made were satisfactory for one year, then a distinct precipitate formed, though assay yielded the full theoretical results.

DR. F. WOKES, King's Langley, pointed out that different forms of aneurine (natural or synthetic) might have different stabilities.

Replying to the discussion, Mr. Waterhouse said that the difficulty reported by Mr. Allport was probably due to calcium carbonate not iron sulphate. The moisture contents of the powders tested were very low (0·2-0·5 per cent); those of the tablets

were higher (1.5-2 per cent.). Concerning the storage/time relation the authors had not set out several years ago to produce the paper. If they had they would have been able to prepare controlled samples that would have provided useful information. Ferric ions were present. Natural aneurine was formed in situ in presumably favourable conditions for maintenance of stability.

Cyanocobalamin and Hydroxocobalamin (Vitamin B₁₂b) in Vitamin B₁₂ Injections

A STUDY of sixty-six batches of vitamin B₁₂ injections made by seven manufacturers, and obtained from hospital pharmacists in eighteen centres in the United Kingdom, has shown that considerable proportions of hydroxocobalamin, sometimes as much as half of the total cobalamin, may be present. The official spectrophotometric assays and identification tests for vitamin B₁₂ injections do not satisfactorily measure any hydroxocobalamin present, and do not detect it unless it forms at least 25 per cent. of the total cobalamin content.

A method based on microbiological assays of vitamin B₁₂ activity, before and after destruction of hydroxocobalamin with ascorbic acid under given conditions, has been used to check on eleven samples of vitamin B12 solutions and injections a spectrophotometric method of determining cyanocobalamin. The agreement between results obtained by the two methods justified applying the spectrophotometric method to the sixty-six batches. The survey showed that, whilst most vitamin B12 injections have a cyanocobalamin content lying between 90 and 110 per cent. of the claim, in some batches the content is well below the claim. That is probably due to conversion of cyanocobalamin to hydroxocobalamin by the action of light. light. The conversion takes place readily in the pH range of the injections (3.5 to 6.5) and can be prevented by storage in the dark. The cardboard boxes normally used to contain ampoules do not appear to provide sufficient protection. However, when ampoules containing vitamin B₁₂ injections in which hydroxocobalamin has been formed by the action of light are subsequently stored in the dark, the hydroxocobalamin may revert to cyanocobalamin. The cyanocobalamin content of most of the vitamin B₁₂ injections at present in use in the U.K., when related to the claimed content, appears to be higher than is permitted in the B.P., 1953. It is suggested that the present upper limit of 96.5 per cent. of the claim should be increased a little, in order to avoid loss of much valuable material.

The authors are Nora Baxter, Janet Horsford and F. Wokes (Ovaltine Research Laboratories), and F. W. Norris and S. J. G. Fernandes (Department of Allied Biochemistry, The University, Birmingham).

The paper was read by Miss Baxter. Mr. G. Sykes, Nottingham, asked for proof of the statement that cardboard boxes were not light-proof. He suggested that other methods of assay might be tried because some results quoted were subject to variation.

quoted were subject to variation.

MR. D. C. M. ADAMSON, London, said that results quoted from American samples seemed to show a greater protection than for example those quoted for British hospital pharmacies. He pointed out that it was once the practice to include overage in vitamin B₁₂ ampoules. Could that account for some of the results? Cyanocobalamin could be broken down in acid or in alkaline solution. Perhaps hard glass ampoules were used, which could yield alkali and account for low results quoted.

DR. HEATHCOTE, Speke, said the paper was the first serious attempt to obtain a discriminatory method. He said that the partition coefficient of the vitamin could be used as a criterion of murity.

terion of purity.

MR. H. S. GRAINGER, London, said he had found it convenient to obtain vitamin B₁₂ solutions in high concentrations and dilute for use. The paper did not report differences between the deterioration of strong solutions and of weak ones.

Replying to the discussion Dr. Wokes said concerning the light-proof properties of cardboard boxes that the samples he used were mostly received in manufacturers' sealed cardboard boxes. As deterioration had been found they stored ampoules under different conditions, some where the light could penetrate and some where it could not. They concluded that the cardboard did not protect against the kind of light that affected the vitamin. In the experiments covered by the paper the whole range of strengths seemed to deteriorate similarly. Other experiments, however, showed that more concentrated solutions were more stable. He agreed that some ampoules



Left to right: Mrs. C. Gordon Oakes, Mr. D. J. Steel, Mrs. and Miss G. Steel, Mr. C. Gordon Oakes.

contained overages. He did not think it fair to compare the American samples with those of British hospital pharmacists as the conditions under which they were obtained were different.

Colorimetric Estimation of Paregoric

IT has been noticed that the official (colorimetric) assay of camphorated tincture of opium gives results significantly higher than expected. Samples were prepared: 1, of official tincture; 2, of tincture without camphor benzoic acid and anise oil; 3, of a preparation with an equivalent of morphine in place of tincture of opium; and 4, of a preparation without opium. The official assay was performed on each sample. No interference from the camphor, benzoic acid or anise oil could be detected. In samples 1 and 2 the results were 10-10 per cent. higher than expected. It was concluded that a substance, other than morphine, which gave the colour reaction was present. A benzene extraction incorporated within the assay process was found to remove the interfering substance. An opium alkaloid, rheadine, gives the colour reaction of the official assay. That has not, however, been shown positively to be the interfering substance.

The authors are G. Tunstall (Evans Medical Supplies, Ltd.) and Mary P. Taylor. The paper was read by MR. TUNSTALL.

MR. R. L. STEPHENS, Brighton, asked whether the authors had applied the methods to tinct, chlorof, et morph., in which he had found interference from treacle and liquorice.

DR. G. E. FOSTER said that if the

DR. G. E. FOSTER said that if the authors had succeeded they would have earned the gratitude of analysts, but the proof of the pudding was in the eating. MR. TUNSTALL, replying, told Mr. Stephens that he had not tried the method on tinct chlorof, et morph.

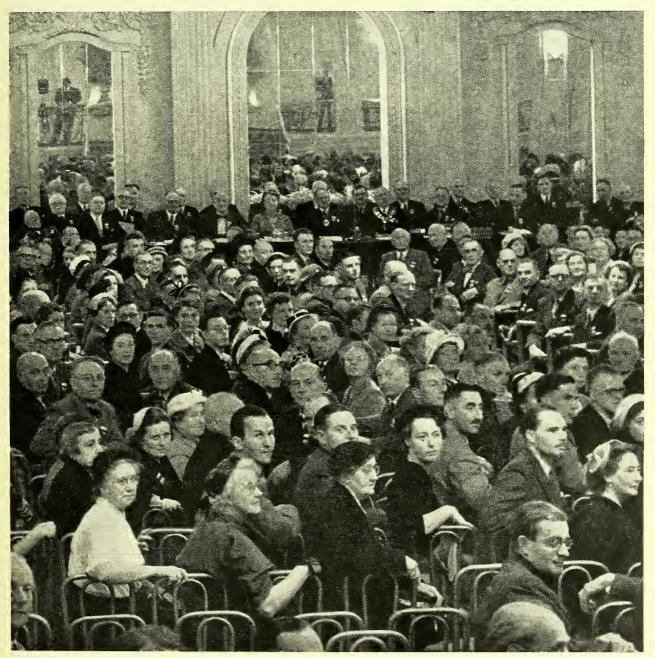
RECEPTION AT COUNTY HALL

COACHES brought about 500 guests from their hotels to a reception by the London Conference Committee at County Hall on Monday evening. They were received by Mr. F. G. Wells (chairman of the London Conference Committee) and Mrs. Wells, and Mr. F. C. Wilson (vice-chairman) and Mrs. Wilson. Dancing was interrupted at 8.45 to receive the vice-chairman of the London County Council (Mrs. I. M. Bolton), its Clerk (Sir Howard Roberts), the mayor of Lambeth (Alderman W. Knight), and the acting town clerk of the borough (Mr. C. Bampton), the chairman of the L.C.C. health committee (Mrs. E. M. Rankin), and the medical officer of health (Dr. J. A. Scott, O.B.E.). During the evening Conference members were able to inspect the Council chamber and exhibitions dealing with London history and the work of the L.C.C., including the inspection of weights and measures.

CHEMIST AND DRUGGIST DAILY BULLETIN

Produced in honour of the ninetieth meeting of the BRITISH PHARMACEUTICAL CONFERENCE, London, 1953

WEDNESDAY, SEPTEMBER 2



AT THE OPENING SESSION: Members turn to face the photographer. (They could have seen him just as easily in the mirror behind the platform),



The platform at the Symposium Session. Mr. Stephenson is at the microphone.

SYMPOSIUM SESSION

OPENING the symposium session of the Conference on September 1, THE CHAIRMAN said that each of the four authors was an expert in his or her own field.

Dr. Boyes called upon each author to deliver a summary of his or her paper. Mr. P. Stephenson was the first to speak, followed by MISS V. DIMBLEBY, Mr. J. HAWORTH and PROFESSOR H. BERRY. Miss Dimbleby had brough! samples of glass and glass containers that had suffered the kinds of deterioration referred to in her paper so that members could inspect them.

Some Experiences with Containers and Closures in the Industry

By D. STEPHENSON [ABSTRACT]

DURING recent years companies manufacturing bottles, collapsible tubes and other containers used by the pharmaceutical industry have made available much information which is invaluable to the pharmacist responsible for deciding whether a container may prove satisfactory for a particular product. There are few standards for containers. When the pharmacist has consulted all the available information he will still need to satisfy himself that the con-



Messrs, H. Grainger (Westminster Hospital) and T. D. Whittet (University College Hospital) in conversation with Mr. A. T. Sissons, Victoria, Australia.

tainer and its closure are likely to maintain the product unchanged for a reasonable time.

The container should not interact physically or chemically with the drug it holds. Storage of container and product at normal, low and elevated temperatures is routine practice in labora-tories concerned with the development of medicinal products intended for widespread distribution in small containers. Periodic assays of the active ingredients are necessary. With dry solids an inspection of the drug and the inside of the container is generally sufficient to indicate when interaction with the container is affecting the product. With liquids a change in colour, clarity, or pH is frequently the first indication of reaction. When preparations are enclosed in metallic containers evidence of corrosion of the metal lining should be sought particularly at the liquid-air interface.

Because tin tubes are relatively expensive, lead, tin-coated lead, and aluminium tubes have been in wider use. Whilst lead tubes might be satisfactory for use with certain products for external use, tin-coated lead would be preferable for many medicinal products. It frequently happens, however, that electrochemical reaction between the lead and tin in the presence of an electrolyte results in more contamina-tion than would have arisen from an untinned lead tube. Aluminium tubes should not be used for aqueous base preparations or oil-in-water emulsions in which the continuous phase has a pH of less than 6.5 or more than 8.0. Aluminium tubes are now being sprayed internally with lacquers or micro-crystalline waxes but the danger of cracks, scratches, or pinholes occurring in the coating is great.

The adequacy of the strength of the

container can usually be judged by handling or a simple drop test. The protection from shock provided by the immediate container will determine the extent of the protection required by the use of further packages such as carton, etc.

Tests for leakage are preferably carried out at a temperature rather higher than that to which the container likely to be exposed. Periodic temperature variations should be arranged. Some containers should be inverted, some laid sideways and others upright. They should be weighed before and after the test period as well as examined for leakage. Vacuum tests, which are useful for eliminating unsatisfactory containers, should be used with discretion.

If the product or one of its constituents is volatile, storage at an elevated temperature (with periodic variations) of filled and partially filled containers, with re-weighing at intervals, will be a useful guide to the suitability of the container. When the product is to be protected from moisture the containers may be tested by storing filled and partially filled containers under conditions of elevated temperature and high humidity. If a container is required for a number of different products, or if a quick answer is required to the question of its suitability, samples should be half filled with freshly dried calcium chloride or anhydrous magnesium perchlorate, carefully weighed and exposed to high humidity and temperature variation. The value of such experiments can be increased by the use of a tried and proved container as a control.

During the 1939-45 war tablets were marketed in corked bottles (in which the cork and bottle rim were sometimes waxed) or in screw-capped bottles (the cap having a composition cork wad faced with special preparations. Those packs were exposed at the docks to blast, fire, water and the effects of the

MA AND MAN

weather. Many cases of goods were returned in which the two types of bottle containing products from the same batch had been packed side by side. In every instance the tablets in the corked bottles were in better condition. The taper of the cork and its resilience reduces the importance of variations in the internal diameter of the bottle neck. Dangers of an incomplete seal due to projecting wadding or crevices in the cork may be minimised by dipping the inserted cork and the bottle rim into a wax bath. Some of the newer micro-crystalline waxes are very resistant to the passage of moisture vapour but have the disadvantage of collecting dust particles.

Importance of Smooth Rims

With screw-capped bottles the closure is formed between the rim of the bottle and the face of the lining wad. It is most important to ensure that wisps of the wadding material are not left overhanging the rim of the bottle or a channel may be left. The most effective closures are obtained when the bottle rims are flat and smooth. The presence of mould marks is to be avoided as they tend to tear the smooth surface of the wad and prevent the face of the wad fitting closely.

There is one type of screw-cap which eliminates some of the dangers of the mould mark and the irregular rim. The screw-cap is supplied without thread. That is formed during the capping process by a special machine. Such bottles must be specially made: the screw-threads join the neck ring of the bottle to enable the formers of the machine to be spun off the cap and the cap to be unscrewed from the bottle. In closure tests that type of screw-cap has given performances closely comparable with those of waxed Screw-caps supplied threaded corks. are usually used with bottles the screwthread of which is not connected with the neck ring. One company manufacturing bottles and caps has introduced an instrument for measuring the torque applied to caps during tightening and the torque required to loosen them (the latter is about 50 per cent. of the former). Caps are usually of metal (aluminium or tinplate) or plastic. The plastics usually used are phenol formaldehyde or urea formaldehyde resins. Caps which can be autoclaved are made from phenol formaldehyde resin. Plastic screw-caps on glass bottles have a tendency to become loose on standing. This has been ascribed to the swelling and contraction of the caps because of temperature and hu-midity changes. When metal caps are made a recess is usually formed into which the lining wad can be pressed so that it will not be separated from the cap by jostling. The method of moulding plastic caps rules out the provision of a recess and wads are of a recess and wads are generally fixed with an adhesive.

Lining wads are usually stamped out of two-layer material. The facing layer usually provides the closure and must be resistant to attack by the product.



Miss Dimbleby interests Messrs, S. Rohatgi, L. H. Boardman and R. Maxwell Savage in aspects of glass technology.

The resilient layer usually is either pulpboard or cork. Cork backing is considered liable to give rise to mould growth when used with aqueous preparations but is more resilient than pulpboard. The resistant surface may be of metal (tin or aluminium) or may be formed from suitable plastic materials spread on sulphite paper. paper helps in smoothing out the irregular surface of pressed cork composi-tion. Rubber, being a compounded natural product, is subject to change by the manufacturer. If changes in composition are made without reference to the user unexpected and even serious results can follow. On one occasion rubber used in the preparation of closures for insulin bottles was changed and chalk added. The effect of storage of an unbuffered acid solution with such a closure resulted in neutralisation of some of the acid with precipitation insulin. Glass tubes with corks or rubber stoppers are replacing tubes of glass or plastic with polythene stoppers or with screw-caps. Polyethylene stoppers are becoming more readily available in Britain. The stoppers are usually hollow and have a short pronounced taper to permit of ready entry into the tube or bottle neck then a slighter long taper to make the contact with the moulded neck (the closure proper). The resistance of poly-ethylene to acids and alkalis makes them ideal for many purposes.

Screw-capped tubes may be internally or externally threaded. With internally threaded tubes the closure is obtained by a small washer which is fitted over the screw thread of the cap and rests against the projecting rim of the cap. That type of closure is not satisfactory. Tubes of cellu'ose acetate, polystyrene, polymethyl-methacrylate, polyethylene, Nylon, etc., are availab'e with screw-caps or stoppers for solid materials. Their limitations depend upon their design and the plas-

tics of which they are made. Aluminium screw-capped tubes prepared by impact extrusion are used largely for tablets. The closure obtained is not so efficient as the corresponding closure of a screw-capped glass bottle. Such containers provide the only example I can recall in which the results of closure tests with a desiccant did not predict the behaviour of the packing when used.

Strip Packs and Permeability

In considering strip packs (film or foil envelopes scaled at the edges) we may be concerned with consideration of the permeability of the material itself. Aluminium foil made from 99.5 per cent. pure aluminium in 0.032 mm. fully annealed sheet coated with heat sealing lacquer gives, for long periods, protection to hygroscopic material equivalent to that of a corked bottle. A well-sealed product may withstand being submerged in water, a vacuum being applied for half an hour, broken and re-applied for a further half hour. In closure tests using desiccants it has been found convenient to express the efficiency of the closure under test as a percentage calculated as follows:—

100 x Mean gain in weight of control Mean gain in weight of test

All that has been said illustrates the fact that no one ideal material exists for the manufacture of pharmaceutical containers. The essential qualities of such a hypothetical substance might be as follows:—1. It must be chemically inert; 2. It must be transparent, but should also absorb actinic light; 3. It must be thermoplastic so that it can be easily and reproducibly moulded with a high degree of accuracy; 4. It must be capable of being heated without change to say 170° C. so that it can be heat sterilised; 5. It must have negligible water absorption; 6. It must be impermeable to water vapour and gases; 7. It must be resilient so that articles made from it are not easily broken; 8. It must be available in two forms, rigid and flexible; 9. It must be cheap.

Glass has many of these properties but is too easily broken and is not easily accurately moulded. Some of the newer plastics have many attractive properties, e.g., polyethylene is-inert, is thermoplastic, almost transparent and of low density, but most grades



Miss M. C. Islip, Miss D. M. Jones and Miss M. E. H. Curry.

are deformed by boiling water and none can withstand autoclaving.

Glass for Pharmaceutical Purposes

By VIOLET DIMBLEBY [ABSTRACT]

THE pharmaceutical chemist requires glass containers to preserve, without contamination, preparations of different chemical composition. Commercial glasses differ in their properties (in-cluding absorption of radiation and chemical behaviour). Glasses which exhibit the greatest all-round chemical resistance also have great thermal resistance and mechanical strength.

Although several substances, when fused, can form glasses, the glasses of commerce are produced by fusing at or more silica with two or more other materials such as limestone and soda ash or red lead with potash. Other constituents may be barium oxide, alumina, zinc oxide, magnesia, boric oxide, lithia, arsenic or antimony oxides, with oxides of copper, cobalt, iron, manganese, chromium, and nickel, as colouring agents. Container glasses are generally of the simple soda-limemagnesia-alumina-silica type, with relatively high expansion coefficients, whilst "neutral" tubing for ampoules may contain considerably more alumina, with boric oxide, and lower alkali content and somewhat lower expansion. Chemical or cooking wares generally contain several per cent. of boric oxide with low alkali but high silica content and a much lower expansion coefficient.

The resistance which a glass offers to the action of any attacking agent depends on chemical composition; temperature of attacking agent; length of period of contact; and previous history of the glass, e.g., mode of production, annealing, special treatments and stor-

The most important factor controlling the chemical durability of glass is its chemical composition. theoretical considerations it is expected that fused silica will resist the attack of water and acids, except hydrofluoric acid and that, of all the other constituents of silicate glasses the alkalis will be most potent in reducing chemical durability. Alkalis disrupt the silica network, forming alkali silicates so that all silica-containing glasses including fused silica itself are attacked by alkaline solutions. As might be expected, the temperature at which glass is exposed to any reagent has a great influence upon the extent of attack especially above 60° C. That effect is more pronounced above 100° C. and whenever such treatments must be given to glass, as in sterilisation in an autoclave, precise control should be maintained upon temperature and time.

Any treatment which can alter the condition of a glass surface will affect its surface reactions and it is known that furnace atmosphere, fire-finishing, mechanical or acid-polishing, acid or water-washing, atmosphere during an-nealing, conditions and length of stor-

age, as well as special surface treatments such as coating with water-repellent substances or "sulphuring' all affect the chemical activity of a finished glass surface. The fire-polished "skin" of a glass is more resistant generally than the inner layers of a glass, hence mechanical abrasion or chipping of bottle surfaces should be avoided, particularly when the bottles

must be sterilised.

The coating of a glass surface with a water-repellent substance such as a silicone appears attractive at first but some such coatings are streaky and patchy, certainly not enhancing the beauty of the glass and likely to arouse suspicion. Questions that immediately arise concern the preparation of the glass; the uniformity of the coating; its freedom from pin-holes; its behavi-our towards alkaline solutions, to cleaning agents and towards dry sterilisation; its impermeability, and its resistance to aqueous solutions in presence of any type of closure at temperatures above 100° C. If under any service conditions the coating be liable to peel off then its remnants may appear as flakes which may be more harmful than alkali extracted from the glass, and the glass will become exposed. It is to be hoped that all these points will be investigated before putting such treated glasses into use.

Best Test for Glass

There is no actual value of the "durability" of any glass as there is of any glass as there is for some of its properties, for at ordinarily employed temperatures glasses have no true solubility but are very slowly decomposing on the surface. The rate of this decomposition is influenced by all conditions. The best way to test a glass is to subject it to the conditions it will meet in service but this often involves too long a time and is impracticable. Recourse must had, therefore, to acceleration methods. Acceleration can be achieved by increasing temperature, or by in-creasing the surface area of contact of reagent and glass by using small cubes or plates or even grains of definitely controlled size rather than a glass vessel. In all tests all conditions, including temperature, time, and ratio of volume of attacking medium to surface area exposed, should be precisely specified and maintained. Measurement of the extent of attack is made in various ways, as for example by change in appearance coupled with production of flakes; change in pн or electrical conductivity of water; rate of forma-tion of a precipitate in an alkaloid solution; the determination of the total alkalinity of water by titration; the dctermination of total solids extracted; and rate of neutralisation of an acid solution (as in the B.P. ampoule test). Some years ago there was consider-

able concern lest arsenic (which was introduced into glass as a decolourising aid), or lead was extracted in such quantity as to render medicinal pre-parations poisonous. The bonding of arsenic and of lead in commercial

glasses would not be expected to be weak like that of the alkalies, but if the silica framework were attacked as by an alkaline reagent all constituents would be involved. Under normal storage during seven and a half months it is unlikely that many glasses would yield arsenic in excess of the British Pharmacopæia limit but the use of arsenic-free glass is advisable for storing all alkaline reagents. Extraction of lead is not likely to occur now that container glasses in Britain rarely, if ever, contain lead except as a trace.

Causes of Flakes

Insoluble flakes sometimes appear when solutions are stored in glass and these may arise from several causes such as decomposition of the contents owing to oxidation or under the influence of radiation; the formation of a precipitate owing to reaction between the contents and closure, or between contents and glass; the presence of minute glass splinters which were not noticed in the contents after filling. Water and aqueous solutions can slowly react with glass, preferentially extracting alkali from the glass leaving a minute layer richer in silica than the body of the glass. This layer may de-velop until it falls away and is seen as flakes. Sodium phosphate and cit-rate, and caustic alkali solutions rela-tively, quickly produce flakes from tively, quickly produce flakes from some glasses.

The solar radiation transmissions of glasses can be controlled by adjustment of chemical composition and conditions of production. By the choice of the right glass as container adequate protection can be given to sensitive materials. "Crookes" and Noviol glasses absorb ultra-violet radiation. Common colourless glass transmits throughout the visible range but absorbs in the Glasses have been deultra-violet. veloped to absorb infra-red rays. Recently, attempts have been made to produce glasses transmitting we'l in the visible whilst absorbing in the ultra-violet. Amber, blue and green glasses are often used in the pharmaceutical industry. For projection against ultra-violet radiation yellowgreen glass has been found the best. The green glasses give the greatest protection from infra-red rays.

For cleaning unused glassware it should be sufficient to use tap water followed by three washes with N/10 acetic acid finally rinsing thoroughly, once with tap water and four times with distilled water, draining for one minute between washes. The vessels should be cleaned immediately before use. If used glass is to be cleaned for re-use some special reagent may be nccessary, such as one of the proprietary detergents or even potassium chromate in sulphuric acid. The germicidal character of caustic soda is well-known but it cannot be readily rinsed from glass, neither can potassium chromate in sulphuric acid, and its use is to be discouraged except in those rare cases where a strong oxidant is necessary to remove residues from previous use.

Technology of Rubber

By JAMES HAWORTH, B.Sc., A.R.I.C. IN 1822 Thomas Hancock, the founder of the rubber industry in Great Britain, used thin sheets of pure natural rubber to cover corks to improve their sealing properties and since that time rubber has continually been used to meet the growing requirements of the pharmaceutical industry. The raw materials of rubber technology are polymers built of long straight chains. The rubbery properties derive from the detailed structure of the chains, their length distribution and the presence of unsaturation or other reactive centres which permit some control by chemical means the plastic and elastic properties of the material. Rubber-like materials are in a transition state, intermediate between solid and liquid.

The most widely used raw rubber in Great Britain is raw natural rubber derived from Hevea Brasiliensis. It is obtained as an aqueous dispersion (rubber latex) which exudes from the trunk of the tree when shallow cuts are made in the bark, and contains 30 to 45 per cent. dry rubber dependent on the season, etc., about 90 to 93 per cent. of which is a hydrocarbon of empirical formula C₅H₈ having an unsaturated double bond to each of the units C5H8, which are linked together in the cis position to form long chains. Its molecular weight is of the order of 300,000. Raw natural rubber as used in industry is of two types distinguished by method of converting the wet coagu-lum to the dried sheet. The type used in greatest quantity is smoked sheet rubber, prepared by drying the washed coagulum over the smoke of wood fires when phenolic bodies are absorbed which colour the rubber a brown amber shade, and act as inhibi-tors of mould growth on storage of the material. The second type is pale crêpe rubber which, because it is sold on appearance, is washed more thoroughly than other grades and so tends to contain less non-rubber material.

Synthetic rubbers are unlike natural rubber in chemical composition alstructure. They may be essentially butadiene/styrene copolymers; chloroprene polymers; isobutylene/isoprene copolymers; butadiene/acrylonitrile copolymers; and silicone polymers, each type having certain properties superior to natural rubber.

Raw rubbers exhibit a marked variation in physical properties with tem-perature, and large and unexpected effects are known to occur when rub-bers are subjected to contact with mixtures of liquids. The absorption of water by natural raw rubber is influenced mainly by the amount of non-rubber constituents present. Raw rubbers are permeable to gases to varying

degrees.

The most important reaction of raw rubbers is with sulphur, and it is the basis of the process known as vulcanisation or cure. The process is usually considered to bring about a degree of cross linking of the long chains in the structure. The second important reaction occurs spontaneously with oxygen of the atmosphere and also involves the centres of unsaturation in the polymer, causing a breaking up of the hydrocarbon chains and ultimately destroying all rubber-like properties. The ready reaction of many rubbers with halogens is also a consequence of centres of unsaturation.

Since the discovery of vulcanisation by Goodyear in 1839 few articles apart from surgical adhesive tape and crêpe shoe soles are made from raw rubber. The table (see below) illustrates the main types of compounding ingredients with typical practical examples.

All the properties of a vulcanised rubber compound vary with the time of vulcanisation, some changing continuously without inflection, others pass through a maximum or

minimum value.

Many accelerators can cause changes in colour, taste, odour and toxicity, the vulcanised rubbers. Fillers are added to the rubber com-pound to modify such properties as hardness, tension strength, stiffness of the raw compound and resistance to abrasion. They can also influence such properties as liquid absorption and permeability to gases. Softeners are used to facilitate the processing of the raw compound and as to control the final hardness of the vulcanisate. They also serve to depress the freezing temperature of synthetic rubbers. Both heat and light accelerate the attack of

vulcanised rubber by oxygen and since the reaction is auto catalytic, a very small amount of oxygen can produce a very marked deterioration.

Pigments include inorganic materials such as oxides of iron, sulphides of antimony and cadmium selenides and sulphides. Organic pigments are being used in increasing quantities and can give rise to difficulties due to their solubility in fluids in contact with the solubility in fluids in contact with the vulcanised rubber, in spite of their insolubility in the rubber itself. Synthetic rubber compounds are formed in a generally similar manner to that used for natural rubber compounds. Many of the chloroprene rubbers do not require sulphysical to the compounds. bers do not require sulphur to bring about vulcanisation, magnesia serving that purpose.

The essential processes of manufacture of articles used with containers

and closures consist of:-

(a) Mixing the rubber compound.(b) Formation of blanks of a suitable shape for loading the mould,

(c) Moulding and vulcanising,

(d) Trimming the moulded article from flush or extraneous rubber.

Zinc stearate, French chalk and mould release agents such as are al-ways likely to be left on the metallic stearates, soaps, polyethylene glycols, silicone oils and sulphonated oils may be left on the surface of the rubber as a film.

They and their products of reaction with rubber are a common cause of turbidity in solutions that come into contact with rubber articles.

Specifications

The main difficulty in drawing up a specification for a rubber article is that the preliminary operations through which the rubber is put in the process of manufacture are "remembered" in the cured products. Hence identical compositions cured in the same way can have different properties arising from variations in processes through which they have passed. Specification of a rubber article by detail of the composition and final properties would thus involve the specification of both the methods and machinery of manufacture. The most useful guidance that can be given to the manufacturer of rubber articles for use in pharmacy is to specify the type of ingredients likely to cause trouble in service, so that those, if possible, can be excluded from the compound. Physical properties meriting attention will include hardness and modulus which can influence resistance to piercing by needles, while tear resistance, compression set and gas permeability are of importance. Resistance to sterilisation procedures is of importance and the possibility of absorption in the rubber of phenolic disinfectants which can cause softening and surface stickiness should be considered. Some note of the change in properties over long storage periods will have to be taken and provided against when necessary.

Ingredient	Soft Vulcanised Rubber	EBONITE	Synthetic Rubber
Rubber	100 Raw natural rubber	100 Raw natural	100 Chloroprene
Vulcanising agent	2 Sulphur	45 Sulphur	{ 10 Zinc oxide 4 magnesia
Activator	{ 4 Zinc oxide 1 Stearic acid		· Magnesia
Accelerator	0.75 Diphenylguanidine	2 Aldehyde- amine cond.	
Extending filler Reinforcing filler	60 Whiting 75 China clay	annie cond.	20.00 1 11 1
Softener	1 Mineral oil		30 Carbon black 7 Tricresyl
Antioxidant	l Phenyl beta naphthylamine		phosphate 1 Phenyl beta
D.	<u>=</u>	•	naphthyl- amine
Pigment Special	5 Iron oxide	3 Cotton seed	
components	3 Paraffin wax	oil seed	

Pharmaceutical Aspects of Glass and Rubber

by H. Berry, B.Sc., Ph.C., F.R.I.C., Dip.Bact.(Lond.).

Glass

THE problem of control of the quality of glass will probably vary in differcountries according to the availability of the raw materials. In Britain borosilicate glass is not plentiful. The problem, however, began to resolve itself by the introduction of the so-called "surface-treated" soda-lime glass whereby it is possible to produce on its surface a resistant skin of silica which will pass a surface test but not necessarily the "crushed" test. The glass technologists urged the adoption of this glass for containers other than ampoules when an alkali limit was essential. The B.P. 1953 has, in effect, done so, for the "crushed" test has been deleted and a surface test retained but without any limitation to the capacity of vessels. I feel, however, that this surface-treated glass has been officially taken on trust, for there is no published data that the resistant skin has a satisfactory long life and will not break down and expose an alkali-yielding under-surface. I think it is desirable that we should have a durability-of-surface test for this glass, particularly as it will be used for large containers that may be used over and over again.

There are also two schools of thought regarding the type of surface The two types of test are based upon the same technique, the neutralisation of a limiting amount of hydrochloric acid. There is the method offi-cial in the Swiss Pharmacopæia that directs that the interior surface of the container be calculated and a quantity of standard acid plus indicator per unit area of surface should be added. This ensures that the quality of the glass is tested and the size of the container is eliminated as a factor. On the other hand the official test which is similar in principle to that in the United States Pharmacopæia arranges for the container to be filled to its prescribed capacity with the standard acid plus indicator solution. Here the volume of the container is a factor in deciding the result but the argument advanced in support of that test is that it is a test of actual conditions to which an alkali-sensitive solution may be subjected. I should like to ask Miss Dimbleby what material other than alkali is liable to be extracted from glass.

There is also the disturbing phenomenon of the flaking of glass from the surface of containers of citrates, tartrates and salines. We should be hap-pier if we knew the cause and if we could have a control test that would exclude glass with this tendency. It has been suggested that the interior surface of glass containers could with advantage be coated with a silicone forming a water repellant surface, thus preventing the extraction of al-kali and the flaking of the glass. Mr.

P. J. Parr concludes, however, that citrate solutions cause the coating of DC1107 silicone polymer to be removed after autoclaving and storage and leave the glass surface vulnerable to normal attack by citrates, and suggests that citrate solutions will similarly attack other silicone polymers even though they are "cured" at higher temperatures. This, however, needs investigating. He suggests that a thinner film (approaching mono layers) might be more effective. There



MR. CARL NORMAN
Secretary, Entertainments Committee

is also the question of protection against light and the production of non-actinic glass.

Finally there remains what might be termed the physical characteristics which we require in pharmaceutical glass and which the glass technologist must include in his considerations of quality. We must have ampoules which:

- (a) will easily melt and seal;(b) will not splinter on opening;

(c) contain no glass " powder." The presence of glass powder in ampoules can be avoided by care in manufacture.

Rubber

It is important that pharmacists and rubber technologists should be brought together for the mutual tabling of pro-

blems and ideas.

In 1937 I examined a batch of injection of morphine hydrochloride (2.5 per cent.) containing 0·1 per cent. chlorocresol, packed as 30-mil quantities in bottles closed with black rubber caps which were wired on, presumably after autoclaving. Tests showed that the rubber had extracted the ch'orocresol and, being cold-cured rubber, had yielded an appreciable amount of acid (HC1) to the solution

which had stabilised the morphine salt. Had another type of cap been used, it would have been possible for the pH to have risen to about 9.5 or 10.0 giving a short life to the injection. It is this type of experience which shakes one's faith in rubber as a suitable material to bring into contact with medicaments, particularly when one contemplates the list of varied and highly active substances which are incorporated in a rubber mix.

In judging the quality of rubber for our purpose it may be convenient to consider it under the following headings:

- a. The physical characteristics.
- b. The yielding of extractives to solutions or preparations.
- c. The absorption of substances by the rubber from the solution or preparation.
- d. The effect of rubber on medicaments.

In addition to resistance to oxidation an important character in rubber caps is that consistency which permits the easy passage of a needle, and which therefore minimises the blunting of the needle. Modern rubbers offer a big range in this property. When the ncedle is withdrawn another important characteristic of rubber should be apparent, namely elasticity, causing an efficient blocking of the hole so that the cap can be repeatedly pierced with-out loss of protection of its contents. Elasticity and "piercibility" are not apparently synonymous.

Extracted oxidisable matter, pro-bably protein, has been reported by Extracted oxidisable matter, Grainger as coming from rubber caps and confirmed by Lloyd, who also states that freshly distilled water passed through a piece of rubber tubing failed to pass the official test for readily oxidisable matter. Cooper confirms this and also refers to extractive which gives a sulphide reaction with iodine and sodium azide. Anticipating the and sodium azide. Anticipating the possibility of water-soluble extractives, the B.P., 1953, specifies that rubber caps shall be boiled in several changes

of distilled water.

I understand that it is possible to obtain deproteinised raw rubber and the question arises why this type of rubber should not be specified for a pharmaceutical rubber mix. It is also of interest to note that Mr. Haworth states that a protein content in rubber is related to the power of absorption of water which is an undesirable property as far as we are concerned. One must also guard against the presence in rubber of such a filler as "whiting" which could react with so-Intions and medicaments of low pH. The almost inevitable presence of zinc in rubber can be a hazard. We have little reported data on the inactivation of medicaments by rubber or rubber extractives. Natural crêpe rubber had no effect on penicillin solutions but other types of rubber varied from no action to an adverse action. Nikethamide has been reported as reacting with rubber and for this reason the B.P. specifies that it shall be packed

in ampoules. Conversely, this reaction has been denied. This variation to action can, I understand from Mr. Haworth, be possible owing to variation in the rubber-mix.

Phenol, chlorocresol and probably other similar water or soap-soluble phenols can be extracted from aqueous solutions by rubber such as rubber caps. Solutions of insulin originally protected by 0.5 per cent. phenol have been shown to be unprotected after

twelve months' storage.

I have found that terpineol or a preparation containing it (liquor chloroxylenolis) caused a rubber sample to swell and lose much of its tensile strength, becoming "cheesy" in texture. (It would appear wrong therefore to use liquor chloroxylenolis on rubber gloves.) If, however, the rubber be then soaked in alcohol, the terpineoly dissolves out, the rubber contracts to its original length and regains its original tensile strength. In a like manner phenol or cresol can be boiled out of the rubber sample which then returns

to its original size.

Iodinc and hypochlorites produce a surface action with little effect on the rubber even after long storage. A glossy film is left on the surface improving the appearance of the rubber and I understand increasing its resistance to the absorption of water. It certainly improves rubber caps to immerse them in hypochlorite solution for about one hour and then boil in water. The surface is not liable to hold particles and greasiness

is removed.

The action of cresol and lysol was interesting as the rubber absorbed a considerable amount of the phenol with no obvious signs of deterioration in character. It is obvious that the surface of rubber so treated must be highly bactericidal (when moist). This raises the point as to whether surgical rubber gloves should ever be immersed in a solution of lysol. The opinion has been expressed that rubber gloves after immersion in a solution of lysol become unsuitable in that on touching tissucs they are liable to cause adhesions, presumably because of the high concentration of cresol at the surface. Colebrook recommended lysol 1/50, however, for use on rubber gloves after placing them on the hands. There is general agreement, I think, that rubber gloves should be wet-heat sterilised and that a modern rubber can withstand many reautoclavings at 105° to 115°C. It has been agreed that a good detergent wash prior to wet-heat sterilisation contributes a great deal to the efficacy of the sterilising and therefore to the use of minimum heat treatment. It is also now well known that it is unwise to subject rubber gloves to dry heat.

Discussion

Opening the meeting for discussion THE CHAIRMAN referred to Miss Dimbleby's mention of co-operation between pharmacists and glass-technologists. He hoped that the discussion would contribute to that co-opera-

Mr. G. Sykes, Nottingham, agreed with Professor Berry that chlorocresol was extracted from rubber caps more quickly than phenol which appeared the best regular preservative. Chlorocresol and chlorbutol were next, in that order. Phenylmercuric nitrate was the worst. Had anybody any information on quaternary ammonium compounds tcrebenes or any opinion on the adequacy of the B.P. method for pre-



MR. ALLEN ALDINGTON Chairman, Entertainments Committee

treating rubber caps; was the method satisfactory with regard to subsequent storage? Had Mr. Haworth any experience of mould growth in rubber?

Dr. H. Davis, London, said that each symposium session improved on its predecessor, and the morning had provided a fascinating discussion. It showed the benefit to be derived when 'outsider" expounded problems in an objective way. Everyone in hospital pharmacy had come to the conclusion that the flaking of glass was due to silica. He had tackled the problem empirically by autoclaving all bottles with sodium citrate solution and rejecting those that flaked. He had found glass autoclaved with sodium metabisulphite flaked less than others, and he asked Miss Dimbleby whether that observation might be linked with the phenomena she had mentioned concerning sulphur. He had seen a case of burns from phenol caused by the use of a rubber sheet soaked in lysol solution, and a case of dermatitis through the use of jaconet stored in chloroxylenol solution, on which phenols had been selectively adsorbed. That was a problem that should be brought to the notice of nurses.

MR. T. D. WHITTET, London, said

that the inclusion of sodium metabisulphite in rubber, mentioned by Mr. Haworth, might explain a number of difficulties that had been observed at his hospital. He agreed with Professor Berry that the action of metabisulphite was on the surface of rubber, which it bleached. He mentioned that rubber of thrombophlebitis. Rubber might absorb pyrogens that develop in tubing

not properly cleaned.

MR. A. E. COOPER, Leicester, asked if Mr. Haworth had any ideas on removing from rubber protein likely to yield granular matter. He had succeeded in extracting from rubber wads a tarry material. Had Mr. Haworth any comments on that? Another member asked Mr. Haworth if he had dealt with silicone-treated rubber closures, and Miss Dimbleby whether alkali treatment of soda-lime glass might not

be satisfactory.

Advantage of Coating

PROFESSOR H. BRINDLE mentioned as the advantage of silicone-coating containers that it enabled nearly 100 per cent, of the contents to be removed. That was particularly important for the packing of expensive preparations.

Mr. H. S. GRAINGER, London, said that the use of hard-glass syringes had so far eliminated the discoloration on sterilisation that had been previously noted with syringes. The use of detergents had been inculpated in that dis-

coloration.

MR. J. H. OAKLEY, London, asked whether some period of weathering for bottles should be prescribed before used When liquid preparations were packed by volume it would be possible to have bottles full, so that dilution of surface layers by evaporation and condensation would not occur. With compounded corks more attention to the bonding material used was needed, so that such corks could be made resistant to mould growth. A better method than waxing of sealing corks was required. For bulk containers (40-gall, or more) an efficient inexpensive liner needed to

be developed,
MR. C. E. TURNER, Stoke-on-Trent,
said that, in retail practice, bottles of liq. atrop. methonit, were issued with rubber caps. He noted that, after one such pack had been kept for one month, some evaporation had occurred. Had Professor Berry any comments?

MR. BROOKS, Nottingham, told Mr. Stephenson that he had found a convex surface best for bottle rims. Bottles were obtainable with the mouldmark removed from the rim to avoid tearing liners. He recommended the use of aluminium that had been hardtempered. A type of bottle cap containing a well for receiving a liner was available. Tin foil or polythene were excellent for the elimination of moulds, and polythene had "solved" the problem of packing iodine solution and preparations containing liquids of low boiling point.

Professor R. Ruyssen, Belgium, re-commended four types of test for rub-

ber closures (see overleaf): -

(1) Absence of change of contents of the container.

(2) Absence of change of pH of the contents.

(3) Limit tests for heavy metal contamination.
(4) Absence of turbidity tests.

MR. Ross, Liverpool, said that rubber, being of botanical origin, was variable and therefore presented a problem. A synthetic rubber might be more suitable, as it had more constancy. For wads for screw-capped bottles, resinbonded was better than gum-bonded cork. Polythene bonding was satisfactory but the material was not generally available. "Stuffing" material for tablets, etc., contained moisture and presented a problem. For ether-containing preparations a metal container was the most satisfactory.

" Quickies"

THE CHAIRMAN then called for contributions in the form of "quickies."

MR. MELLOCH, Chessington, asked Mr. Stephenson what he would suggest for containers that had to be transported by high-altitude aircraft

ported by high-altitude aircraft.

MR. P. J. FOWLER, Bristol, suggested that the use of sulphated detergents caused the formation of a skin on the glass which decolorised on heating, and even split off in the form of needles.

MR. DOUGLAS, Horsham, asked Mr. Haworth if he had used a control when carrying out humidity tests on rubber closures that were impregnated with preservative. He had found by experience that of flint glass bottles for sterile sodium citrate solutions pure white ones were less liable to flake. That had provided a method of selecting bottles.

DR. G. F. FOSTER, Dartford, pointed out that in arriving at a specification for rubber a representative sample of the material was needed. How could that be obtained? Some years ago he had been advised to powder rubbercaps. That, however, was difficult to do. Had Mr. Haworth any ideas on a specification?

A lady member from Bromley said she had experienced no difficulty regarding flaking from amber glass bottles when used for sterile sodium citrate solutions.

The opening speakers replied.

MR. STEPHENSON said that he did not know the answer to the coating of corks with water-impervious substances. He had, however, long been searching for a plastic with a sharp melting-point for coating corks. He had found flat rims for bottles the best. A "compo" cork made with polythene was free from many of the criticisms of other lining materials. The effectiveness of a closure depended on other factors than wads — factors such as tightness and the degree of expansion of the cap.

expansion of the cap.

MISS DIMBLEBY, in her reply, took first the question of improving glass by pre-washing with water or acid. There a surface reaction took place, leaving a surface richer in alkali or silica. That film was slightly more resistant, but if containers so treated were to be stored

or transported before use they should be thoroughly dried. Treatment with synthetic detergents that were aikaline might attack the silica skeleton, and some absorption of coloured material might take place. For weathering bottles, careful control was needed. A surface layer of silica could be produced having different properties with respect to light, so that some disfigurement might result.

Sodium phosphate would always produce flaking from glass. The behaviour of sodium citrate depended upon the glass used. Silicone coatings had the disadvantage that, after repeated autoclavings, they came away. Sulphuring of glass surfaces produced resistance that lasted for a period only. All methods of testing glassware were empirical. The gradual decomposition of the glass surface depended upon a number of factors. A test should imitate the conditions of use, and should allow a margin of error. Mr. HAWORTH said he had not seen any cases of moulds growing in the body of rubber but he did not consider it unlikely. He was not sure that the reaction between sodium metabisulphite and rubber was a surface one. It was possible to deproteinise rubber. Before the 1939-45 war a deproteinised rubber had been on the market, but it was fairly costly. The fact that a carcinogenic oily residue had been extracted from rubber was perhaps due to the softness or fillers put into rubber during manufacture. Carbon black (a filler) often contained oily material. His general experience of silicones was that they all gave trouble. There was no evidence that the colour of rubber affected its absorption properties. Concerning the sampling and testing of rubber he said that the material was normally tested by experiments, the results of which were normally worked out statistically. He had noted widely different ph values in various sulphonated deter-

PROFESSOR BERRY, replying, told Mr. Sykes that little was known about the absorption by rubber of the bacteriostats required to be included officially in injection solutions.

Bacteriostatic Rubbers

Although he would expect mould to grow in raw rubber, rubber could be made that was highly bacteriostatic. He mentioned that the coating of glass with silicones, although unsightly, as mentioned by Professor Brindle, might be valuable, and "we may have to get used to it." For ampoules to be used in high flying he suggested the use of types with an elliptical cross section to allow for expansion.

THE CHAIRMAN thanked all those who had taken part in the discussion, which he said had brought to light much valuable information on closures and containers.

Correction.—The paper on the calorimetric estimation of paregoric resulted from work in the laboratories of Evans Medical Supplies, Ltd., Speke, and not as stated on early copies of the bulletin.

CONFERENCE BANQUET

MEMBERS attending the Conference banquet on September 1 were received by the Conference president (Mr. T. Heseltine) and Mrs. Heseltine and the Conference chairman (Dr. G. R. Boyes) and Miss L. M. Boyes,

Each lady found at her place at table a serviette ring ornamented with the Conference badge design as a gift from

the London Committee.

The toast "The British Pharmaceutical Conference" was proposed by SIR CECIL WAKELEY, C.B., K.B.E., P.R.C.S., who said that a principal point of progress brought about by the pharmacist and his colleagues was the production of precision drugs to help the surgeon's patient to be anaesthetised, to reduce his blood pressure and to make him safe for surgery. He was confident that drugs would be produced that would rob surgeons of operations—that would eventually cure cancer.

In his response DR. BOYES said that Sir Cecil had reminded them that the Conference had reached the age of four score years and ten but it was still a youngster compared with the Royal College of Surgeons. "We of the British Pharmaceutical Conference owe much," said DR. BOYES, "to the gathering of pharmacists in Newcastle" from which the Conference had originated. Many of the present company had helped to maintain the great tradition.

DR. DON E. FRANCKE (chief pharmacist, University Hospital, Ann Arbor, Michigan) proposed "The Pharmaceutical Society of Great Britain." He expressed the appreciation of American pharmacists to the Pharmaceutical Society of Great Britain for sending to the American Pharmaceutical Association's Centennial celebrations in 1952 a number of its leading officers. He referred to the honours that British pharmacists had received in Coronation year and said he felt that pharmacy played an important part in the work for which they had been honoured.

The president of the Society (Mr. T. HESELTINE) responded.

SIR HUGH LINSTEAD, O.B.E., M.P., Ph.C., proposed "The Visitors," to which the response was made by Mr. D. W. LOGAN, D.Phil., M.A., B.C.L. (principal of London University).



Mr. Michel Laurent, Paris, with Lady Linstead.

CHEMIST AND DRUGGIST DAILY BULLETIN

Produced in honour of the ninetieth meeting of the BRITISH PHARMACEUTICAL CONFERENCE, London, 1953

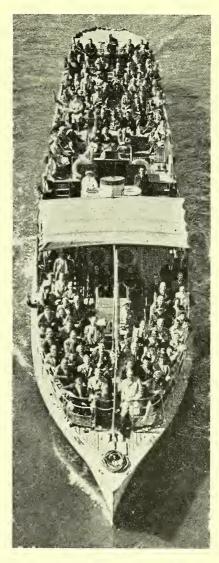
THURSDAY, SEPTEMBER 3



CONFERENCE EXCURSION: Above, members arriving at Festival Hall, Below: Embarkation.



Below: Settling in. Right: One of the launches passes beneath London Bridge.





CONFERENCE PERSONALITIES

MR. J. ARMSTRONG, Ph.C., Nottingham, who is the co-author of a paper dealing with an *in vitro* evaluation of antacids, was educated at Clitheroe Royal Grammar School and served his apprenticeship with Boots, Ltd. From 1939 to 1946 he served in the Royal Air Force medical services and then studied at Manchester University obtaining the pharmaceutical chemist qualification in 1949. Since October 1949 he has been on the staff of Boots, Ltd., Nottingham, engaged in the pharmaceutical development department on the formulation work of medicinal products.

MRS. MARY MARTIN, M.P.S., Nottingham, who is co-author of a



paper on an in evaluavitro tion of antacids joined the staff of Boots, Ltd., Nottingham, in 1951. She is engaged in the pha rmaceutical development department on form u lation work. Mrs. Martin was educated at Penrhos College, Colwyn College,

Bay, and qualified as a chemist and druggist in 1951 after study at Nottingham University. Her apprenticeship was served at the Nottingham General Hospital.

MRS. MARY P. TAYLOR, B.Sc., Betchworth, Surrey, who is the coauthor of a



paper dealing with the evaluation of buffer antacids and of another concerned with the colorimetric estimation of morphine in paregoric, is a member of the staff of the pharmaceutical laboratory of the Beecham Research Labora-

tories, Ltd., Betchworth. Mrs. Taylor graduated from Liverpool University with a B.Sc. degree in chemistry in 1948 and after two years doing information work she joined the analytical staff of Evans Medical Supplies, Ltd., Liverpool. Shortly after her marriage at the end of 1952 she took up her present appointment.

MISS VIOLET DIMBLEBY, M.Sc., F.S.G.T., Sheffield, who contributed a paper on glass for pharmaceutical purposcs in the Symposium Session is a senior member of the staff of the department of glass technology, University of Sheffield, a fellow, and formerly

a vice-president, of the Society of Glass Technology on the council of which she has served for many periods and for many years been secretary of its chemical analysis and chemical durability committees. In the summer of 1918, after holding the post of physics mistress in the Herbert Strutt Secondary School, Belper, for four years, Miss Dimbleby accepted an invitation to join the staff of the newly formed department in the university and has had charge of the chemical section for many years. That involves control of tests for the glass industry, the training of analysts, research work and teaching.

MR. C. E. WATERHOUSE, Ph.C., F.R.I.C., Southport, who is the co-



author of a paper on the stability of aneurine hydrochloride in pharmaceutical preparations, is chief chemist with Bob Martin, Ltd., and Martin & Martin, Ltd., Southport. After study at Manchester University Mr. Waterhouse qualified

house qualified as a pharmaceutical chemist in 1935 and remained on the teaching staff of the University's pharmaceutical department until 1939. Later he studied under Mr. S. E. Melling, M.Sc., F.R.I.C., and passed the examination of the Royal Institute of Chemistry in branch E (food and drugs) for the fellowship. He presented papers to the Conference meetings held in 1938 and 1936. Current work in which Mr. Waterhouse is engaged includes research on animal nutrition, which is published in veterinary publications.

MR. H. PARTINGTON, Ph.C., Southport, who is the co-author of a



paper dealing with the stability of aneurine hýdrochloride in pharmaceutical prepara-tions, is employed as a research chemist with Bob Martin, Ltd., Southport. Mr. Partington studied pharmacy Manchester University passing the Chemist

and Druggist Qualifying examination in 1934 and qualifying as a pharmaceutical chemist the following year. He was appointed an assistant chemist with Bob Martin, Ltd., in 1937, and in 1942 he went to Evans Medical Supplies, Ltd., Liverpool, as an assistant

analyst, returning to Bob Martin, Ltd., in 1947.

MR. G. TUNSTALL, A.R.I.C., Wallasey, Ches, who is the co-author



of a paper on the colorimetric estimation of morphine in paregoric, senior analyst in the pharmaceutical research and development unit of Evans Medical Supplies, Ltd., Liverpool. Mr. Tunstall was educated at the Oldenshaw Grammar

School, Wallasey, and at the County School, Hawarden. In 1943 he joined Messrs. Evans as an apprentice analyst and after study at Liverpool College of Technology was elected an associate of the Royal Institute of Chemistry in 1948. From 1948 to 1951 he was employed as an analyst in various posts including one with the Lancashire County analytical laboratories, Preston. On January 1 he took up his present appointment,

MR. JAMES HAWORTH, B.Sc., A.R.I.C., A.Inst.P., London, who contributed a



tributed a
paper on
technology of
rubber in the
Symposium Session, is technical director
with J. G. Ingram & Son,
Ltd., rubber
manufacturers,
London. Mr.
Haworth graduated in 1936
at Manchester
University after
taking the

Honours course in the school of general science He worked for a period with Dickinson & Son, Oswaldtwistle, where he was concerned with the manufacture of chemicals for rubber and halogenated phenols as disinfectants. After working for about six years with the Dunlop Rubber Co., Ltd., Birmingham, as research physicist, he was for a time research secretary of Ferodo, Ltd. In 1944, he joined the rubber service laboratory of the dyestuffs division of Imperial Chemical Industries, Ltd., London, as rubber technologist and became section leader in charge of application research concerned with the development of chemicals for use in rubber compounding. In 1950, he joined J. G. Ingram & Son, Ltd., as research manager and was appointed technical director in 1953. He has published many papers and is an examiner for the Institute of the Rubber Industry.



SCIENCE **SESSIONS**

THE first paper to be read at the science session on Tuesday afternoon

Evaluation of Emulsion Stability

HEAT has been used as an artificial breakdown stress in the evaluation of emulsion stability. Two methods of evaluation were employed — size frequency analysis and globule counting. The techniques made use of a hæmacytometer and a camera lucida. The techniques can detect small degrees of deterioration in emulsions, which should provide a useful method of predicting changes on a macroscopic scale. The work confirms that finer dispersions usually are more stable. It is considered that size frequency analyses vield a more complete and reliable picture of the internal state of the emulsion.

The authors are H. P. Levius and F. G. Drommond (research laboratories of the University of Colorado, College of Pharmacy, Boulder, Colorado,

ado, U.S.A.).

The paper was read by Mr. Levius, Mr. E. Adams, Plymouth, said that the idea was a good one but the results were disappointing. A warning should be issued that certain emulgents are liable to change in type (oil-in-water to water-in-oil or vice-versa) with rise in temperature. Under those conditions the method described could not be used.

MR. J. H. OAKLEY, London, wondered whether particle size could be now considered a criterion of stability. By microscopical examination of emulsions he had noted that one which had small, even, closely-packed glo-bulcs appeared to be under a physical strain while one with globules of un-even size seemed more stable. Mr. N. J. VAN ABBE, Loughborough, said that a test on emulsions must take account of viscosity.

Another member asked whether there was any relationship between viscosity and stability, if creaming oc-curred on storage and whether there was any correlation between creaming

and stability.

MR. LEVIUS, replying, said that he had attempted to use cracking as an end-point but that had proved impracticable. It was impossible to tell when an emulsion had cracked. No relationship between globule size and stability was evident. Increase in viscosity usually leads to higher stability but again no definite rule could be stated. Creaming had been noted in stated. Creaming had been noted in some cases, not in others. Again no relationship between creaming and cracking could be noted.

Comparison of Sterility Tests for Oils

To evaluate sterility tests for oils it is necessary to prepare samples of oils containing micro-organisms of known species evenly distributed in low but approximately known concentrations.

That was done by contaminating arachis oil with spray-dried, milled peptone powder that was itself heavily contaminated with Bacillus subtilis and making serial dilutions of the mixture with sterile oil. An estimate of the number of spores per gm. was made by carrying out a viable count on the original powder and calculating the result by statistical methods. On those oils the B.P. sterility test, a filtration test devised by Davies and Fishburn, and a sterility test based on a limiting viable count technique, were per-formed. The first two tests depend on proving bacterial contamination of previously sterile broth with organisms



BREAK FOR COFFEE: Miss S. Barnett, London, with Mr. N. D. Morris, London.

from the test oil and in the third test organisms are counted. With an oil containing two spores per gm. all three tests consistently indicated contamination in all samples. With an oil containing four spores in 10 gm. the counting technique was found to be the most sensitive. The other two tests in order of sensitivity are the B.P. test and the filtration test.

The authors are K. Bullock and N. H. Booth (department of pharmacy, University of Manchester).

The paper was read by Mr. Booth. Mr. E. Adams, Plymouth, said the authors were to be congratulated on their paper and suggested the use of a tube of small calibre in the tests. MR. WRIGHT, Nottingham, said there

was little doubt that it was better to shake the mixture daily than to leave it for five days. Vegetable organisms died out rapidly. In similar tests he had been less fortunate in his choice

DR. G. E. FOSTER, Dartford, said that the composition of the culture medium had a great deal to do with the

results of sterility tests.

Mr. RICE, Nottingham, remarked that narrow tubes were good but, if the culture medium was changed, wide tubes were an improvement. He and his colleagues used what they call a "sloppy" agar medium, agar medium.

MR. BLACKBURN, Knaphill, asked if the authors had taken into account the

presence of fatty acids in the oil, the free acids had been shown to be markedly toxic to some organisms. He thought that using a spray-dried powder the particles would be comparatively large. The author replied that the particle size had been reduced by milling the powder.

MR. G. SYKES, Nottingham, thought that the organic solvent would destroy

the organisms.

Mr. Booth replied that the use of a small-calibre tube was of doubtful value. Extensive tests had been carried out with various solvents and petro-leum ether (B.P. 40°) had been found satisfactory and it did not kill the

The following papers were taken together; Messrs. Whittet and Mahran

were the readers:-

Dry Extracts of Cascara

For preparing dry extract of cascara it was found that percolation with boiling water is a more efficient method of extracting cascara than with cold water. The use of autoclaving also appears to increase efficiency of extraction. The use of reduced pressure for evaporating the percolate does not give an extract with increased potency and may cause reduction in potency, and a method using autoclaving followed by pressing of the marc is as efficient as the official method

and results in a great saving of time.

The authors are W. H. Bruce and T. D. Whittet (pharmaceutical department. University College Hospital,

London).

The Evaluation of Cascara Sagrada

A COLORIMETRIC method for the determination of anthracene glycosides in cascara sagrada and its preparations is described. In it anthraquinones are removed by extraction with hot water and hydrolysed to aglycones by heating with hydrogen peroxide and sulphuric acid. The aglycones are purified by extraction with ether from alkaline solution. After further extractions solution. After further extractions with alkali and ether and treatment with hydrogen peroxide and sulphuric acid the red colour is determined photo-electrically. By oxidation in acid medium and by treatment at one stage of the assay process with sedium stage of the assay process, with sodium metabisulphite and sodium bicarbon-ate it was possible to destroy certain pigments which interfered with the final coloured solution. Seven samples of cascara and twelve commercial samples of cascara galenicals were assayed by that method and by a biological method and the results showed good correlation. The results, however, showed that commercial samples of galenicals contain only about 15 per cent. of the original activity of the crude drug. More efficient methods

of preparation are being sought.

The authors are J. W. Fairbairn and G. E. D. H. Mahran (pharmacognosy research laboratory, School of Pharmacy, University of London).



Following an official of the London County Council, Mr. F. G. Wells (cbairman of the London Conference Committee) passes cercmonially between Conference members at County Hall.



Mr. W. E. Morris (secretary of the Conference Finance Committee) with bis Committee chairman (Mr. J. C. Hanbury) and Mrs. Hanbury.



Two members in weighty discussion at the L.C.C. exhibition at County Hall.



RECEPTION AT COUNTY HALL! The Conference chairman (Dr. Boyes) being received by the chairman of the London Committee (Mr. F. G. Wells) and Mrs. Wells, and by its vice-chairman (Mr. F. C. Wilson) and Mrs. Wilson.



DEVOTEES OF THE THEATRE. Miss Joan and Mr. W. H. Cloud, Mr. Joseph Reed, Miss A. J. P. McBride and Miss V. W. Burrell examine a model of the former Globe Theatre, Southwark, with its Sbakespearian associations.





Left: The secretary of the Pharmaceutical Society of Northern Ireland (Mr. W. Gorman). Right: Mr. R. McCrone, Glasgow, with Mrs. and Mr. Andrew Officer, Glasgow.



PICTURES AND PERSONS



GAELIC GET-TOGETHER: Mr. J. P. Kissane (president of the Pharmaceutical Society of Ireland) and Mr. James Coleman (secretary) with Mr. S. Hughan, Glasgow, Mrs. Hughan, and Mrs. Kissane.



Dr. H. Davis with his daughter and Mrs. Davis.



Miss B. Wilson with Mr. H. J. Newitt.



Miss R. C. C. Chauk, Hong Kong. Miss B. Moskowitz, Detroit, U.S.A.



Sir Cecil Wakeley proposing the toast of the Conference.



Sir Hugh Linstead with Dr. E. Unna, Hamburg.



Professor and Mrs. Dodds, London,



Israel's delegate with Mr. Don E. Francke, U.S.A.

MR. T. C. DENSTON, London, said that the papers should go some way to strengthen the status of cascara, but he thought that the method suggested would bring forth criticisms from those interested in using 500 kilo of the drug instead of 500 gm. He could not reconcile columns B. C. and D. with the other figures given in Mr. Whittet's paper, neither could he see that two places of decimals were appropriate. The 1885 extract was solid.

MR. H. DEANE, Long Melford, spoke of the appropriace shown by Martindale.

of the annoyance shown by Martindalc when his favouring of alcohol for extracting the drug had been over-ruled in the British Pharmacopæia of 1898. Hydrogen peroxide had been used in France to produce a preparation frec

from griping properties.

DR. W. MITCHELL, London, said that he had found that heating of any cascara extract other than the soft one could be done without harm. Did the authors' product comply with the official water extractive tests? He was puzzled that the yield produced by the B.P. 1932 process was better than that from the B.P. 1948 process. He thought that the authors' cold water method chanced to be more efficient. The paper did not prove that autociaving was more efficient than the use of boiling water. Autoclaving methods were impracticable on the manufacturing scale.

He asked Mr. Mahran whether any research had shown that the value of cascara extracts improved on storage. As an analyst he protested against the heating of calibrated glassware in a

water bath.

MR. A. W. BULL, Nottingham, asked whether Mr. Whittet and colleague really thought that a difference in concentration led to such a difference. He thought that if the proposed method were applied commercially there would be wide variation.

Mr. L. H. BOARDMAN, Manchester, said that Mr. Whittet had drawn attention to the fact that the present B.P. method of extraction was not bad. He agreed, however, that the use of hot water helped the yield, though it might result in the water-extractive having to be reduced from 80 to 75 per cent. He would hesitate to cost out the preparation of the extract by the recommended method using quantities of two tons of bark and to try to sell it. He was sorry that nothing had been said about whether the oneyear-old bark was satisfactory, and asked for advice on that point.

DR. J. H. OAKLEY, London, said that the biological method was more useful than the chemical with the bark, but with the galenical the position was reversed. He could not explain that situation, but was convinced that hot extraction was better than cold. Translating Dr. Fairbairn's method to a 1-ton scale necessitated the use of 20,000 gall, of distilled water and put the method out of court. It seemed that the bark was better than the extract, and that the experimental animal had a better extraction process than the manufacturers. Would an alkaline or acid menstruum be better than water?

MR. R. L. STEPHENS, Brighton, suggested that the lost activity might have gone into the "exhausted" drug. Had that been tested for activity?

Replying, MR. WHITTET said that it might be that extraction destroyed some of the active compounds. He accepted Mr. Denston's criticism about the 1885 product and the presence of two places of decimals. The difference between the results with the 1932 and 1948 official methods was puzzling, and they were investigating it. He did not



MR. NORMAN DEWEY Chairman, Reception and Housing Committee

think that the water-extractive test mentioned by Dr. Mitchell was importtant to his method. The method-on a hospital scale-saved time, and temperature and time were not critical. He thought that it might be necessary eventually to prepare a palatable form of the crude drug

MR. MAHRAN, replying, said that the B.P. was specific about storage of the bark, which should be for one year. It was possible that an enzyme had a slow effect. The choice of solvent

was important.

The following two papers were taken together:

Alkaloid Biogenesis

CHANGES in the proportions of typical alkaloids during the life cycles of Atropa belladonna and Datura tatula var. inermis were studied by the analysis of plant specimens dried at 60° to 65° C. In some cases the identity of 65° C. In some cases the identity of the alkaloids was checked by the preparation of crystalline derivatives. Changes in the alkaloid content of A. belladonna demonstrate that during the first year the concentration rises to a maximum at the beginning of flowering and declines during fruiting. During the second year the concentration decreases rapidly until flowering begins and declines during fruiting. In D. tatula var. inermis alkaloidal concentrations rise to a maximum at the time of flowering.

The authors are W. C. Evans and M. W. Partridge (the University, Nottingham).

> Alkaloid Biogenesis in Tetraploid Stramonium

PREVIOUS work showing a considerable increase in alkaloid content in the aerial parts of tetraploid plants of Datura stramonium and D. tatula compared with diploid controls has been confirmed, a maximum increase of 286 per cent. above 2n mean being re-corded in an F₁ plant. When diploid D. stramonium scions were side-grafted on diploid tomato stocks no trace of solanaceous alkaloid was found in the scions or stocks. In the reciprocal grafts alkaloids were present in stocks and scions in amounts equivalent to those found in normal diploid Datura plants. Comparison of the total alkaloid content of the roots of tetraploid and diploid plants of *D. stramonium* and *D. tatula* showed that the roots of tetraploid plants were richer in a1kaloids than the corresponding diploid controls, the increase being up to threefold. Reciprocal grafts between tetraploid and diploid D. stramonium suggest that the 4n or 2n nature of the stock determines the alkaloid content of the scion and stock. Thus in 2ns/4ns grafts the alkaloid content of scion and stock was equivalent to that found in normal 4n plants; in 4ns/2ns the alkaloid content was equivalent to that found in normal 2n plants. Some divergent results were obtained indicating possible influence by the scion on alkaloid content of both stock and scion. In grafts 2ns/4ns the tomato scion appears to have a depressant effect on the alkaloid content of the 4n stramonium stock; this effect is less marked when 4n tomato is used as the scion. In branch chimeras the 4n branch is richer in alkaloid than the 2n branch growing on the same root. The authors are Betty P. Jackson

and J. M. Rowson (museum of the Pharmaceutical Society).

The papers were read respectively Dr. Evans and Miss Jackson. by Dr. Evans and Miss Jackson.
Dr. W. Mitchell, London, asked the authors of the first of the two papers for their opinion on the value of the alkaloids to the plants. Werc they merely waste products or, as he believed, did they have some place in the metabolism of the plant? It was unlikely that plants would use energy to build up useless complicated molecules. Furthermore why should solan-aceous plants pack their seeds with alkaloids? The quantities of hyoscine reputed in Atropa belladonna were very small. Had the authors proved the identity of the alkaloid by

DR. K. BULLOCK, Manchester, asked the authors of the second paper whether they had information on the yield of alkaloid per acre or on the proportion of alkaloidal nitrogen of

the total nitrogen.

DR. T. E. WALLIS, London, said that the papers confirmed that the official method of collection of Belladonna was the correct one. Datura tatula and D. ferox behaved differently when germinating. It looked as if one plant was using hyoscyamine and the other hyoscine. Apparently the authors of the first paper find that Belladonna produces alkaloids in the root while Datura produces them in the stem and root. The two plants were respectively a perennial and an annual.

DR. EVANS, commenting on the second paper, said that the authors had made an interesting approach to the problem of determining the site of alkaloidal biogenesis. He considered that the evidence presented in the paper suggested that alkaloids were formed in the aerial parts. It had not yet been proved that hyoscine and hyoscyamine were synthesised in the same organ of *Datura* plants. An estimation of content of total alkaloid would, therefore, yield misleading results.

MR. WOODHEAD, Manchester, asked whether it was possible to identify alkaloids in the transpiration stream. It might be that the precursors and not the alkaloids themselves were moving about

Ing about.

Replying, Dr. Evans said it was difficult to answer some of the points raised, as the work was in the initial stages. He thought it was not easy to lay down rules on the reason for the production of alkaloids, as that was a big class of compounds. In some cases, but not all, crystalline derivatives had been prepared proving that the alkaloid concerned was hyoscine. Alkaloidal synthesis in the root of Belladonna had not been proved but it was probable. He was dubious about the value of tests to determine the constituents in the transpiration stream.

MISS JACKSON told Dr. Bullock that they had not arrived at the figures for which he asked. She agreed with Dr. Evans that the results appeared to suggest that alkaloidal formation took place in the aerial parts but she felt that the evidence for believing the origin to be in the roots was overwhelming. When a stramonium top was grafted on to a tomato stock there was complete absence of alkaloids showing that a stramonium top was not capable of producing alkaloids.

DR. ROWSON said that in the experiments several hundreds of grafts had been prepared and he congratulated Miss Jackson on the thoroughness of her work. The site of alkaloidal synthesis was a problem that had still to be solved finally.

Estimation of Alkaloids by Paper Partition Chromatography

THE separation of tropane alkaloids on buffered paper and the subsequent elution of the individual alkaloids is described. The estimation of the recovered alkaloids was carried out by the Vitali-Morin reaction. The chromatographic results taken in conjunction with the total alkaloid content of a

plant material were used to determine the hyoscine and hyoscyamine contents of the sample. The proposed assay has been applied to samples of Datura sanguinea and of Duboisia species. It was found that the aerial parts D. sanguinea contain sufficient hyoscine to make the plant a possible commercial source of the alkaloid. Besides hyoscyamine a number of minor alkaloids, of which valeroidine was identified, are present. Hyoscyamine predominates in the root. Results



MR. B. E. KENT Chairman, Publicity Committee

with *Duboisia* species confirm known data regarding the alkaloids present.

The authors are R. E. A. Drey and

The authors are R. E. A. Drey and G. E. Foster (Wellcome Chemical Works, Dartford).

Because time was getting short, THE CHAIRMAN asked Dr. Foster to read his main conclusions only, in view of the fact that members had received copies of the complete paper. Dr. Foster agreed to that

agreed to that.

DR. W. MITCHELL, London, suggested, as the authors had encountered difficulty from obscuration of spots, preliminary extraction with chloroform to separate the alkaloids. DR. EVANS, Nottingham, said that the methods described were similar to his own except for the chromatographic medium used. He asked how the valeroidine was identified.

MR. WOODHOUSE, Manchester, said that alkaloidal recoveries were said to be typical, there was a difference in the results of two assays. Was there any loss of alkaloid and at what stage? DR. J. B. STENLAKE, Glasgow, said that recent work showed that an ion exchange process took place between some ions present and certain substances on the surface of the paper. That might explain the differences. The conditions used certainly tended to minimise that problem but it was worth considering. Had any tailing of spots been observed? It might be possible to suppress ion exchange by saturating the paper with a salt solution.

MR. DREY, replying, said that chloroform extraction had occurred to them and work on that was being done. The alkaloid was identified only chromatographically: it was difficult to prepare derivatives. Almost no tailing had been noticed. The apparent loss might be due to retention or to decomposition.

The morning session on September 2 started at 9.30 a.m. The chairman called upon MR, E, M, BAVIN to read the paper:—

4-Benzamidosalicylic Acid

In PAS treatment the nauseous taste of the drug is a serious difficulty. The pharmacology of a PAS derivative, the calcium salt of 4-benzamidosalicylic acid which is almost tasteless, has been studied. If the substance decomposed within the body liberating free PAS it might provide a more tolerable method of therapy. Investigation showed that the derivative is decomposed at least partially in the animal body yielding PAS and benzoic acid. The reaction is probably enzymatic in character and is brought about by most tissues especially in the kidney. The liberation of PAS occurs steadily and it is possible PAS occurs steadily and it is possible to maintain low plasma levels of PAS over a period. Urine levels are much higher and equally prolonged. The tuberculostatic activity of calcium 4-benzamidosalicylic acid is approximately half that of PAS. It appears to delay the emergence of streptomycin registance. resistance.

The authors are E. M. Bavin and Barbara James (Smith & Nephew Research Ltd.)

search, Ltd.).

DR. G. E. FOSTER, Dartford, asked what was the mechanism of the breakdown reaction. Mr. T. H. Elliott asked whether the authors had considered the use of paraphenylene ethylene diamine as an assay process. In reply, MR. BAVIN said that the mechanism was briefly, a breakdown of the calcium 4-benzamidosalicylate to PAS which was itself broken down to metaaminophenol. They had considered using paraphenylene ethylene diamine but had had more experience of the method described in the paper.

Dr. F. Hartley, London, read the next paper:—

Anti-cortisone Properties of a Desoxycholic Acid Compound

21-ACETOXY-12∝: 17∝-dihydroxypregn-4-ene-3:20-dione (Va), a structural analogue of hydrocortisone acetate, has been prepared from desoxycholic acid. A preliminary evaluation of its biological properties shows that the compound inhibits the glyconeogenetic activity of cortisone acetate in the adrenalectomised rat. It seems opportune to speculate on the possible existence of natural steroids with inhibitory functions. The liver is known to synthesise cholesterol from acetate and thence convert it into cholic acid, desoxycholic acid, etc., by oxidative and reductive procedures. In addition, it is now clear that the liver also contains enzyme systems able to convert simple steroids into cortisone.

The authors are Mrs. W. J. Adams, B. G. Cross, A. David, F. Hartley, D. Patel, V. Petrow and Mrs. I. A. Stuart-Webb (research laboratories, The British Drug Houses, Ltd.).

Inviting discussion, THE CHAIRMAN commented that it was interesting to note that starting with a thesis it had been possible to produce a cortisone

antagonist.

DR. G. E. FOSTER, Dartford, sought details of the synthesis of the compound, and suggested that it might be used to test the theory that the adrenocorticotrophic hormone stimulated the adrenal glands to produce cortisone, for the new compound should inhibit the action of ACTH.

Dr. Hartley, replying, said that the details of the synthesis were available for anyone interested. It was important to consider to what extent the new compound inhibited the other hormones of the adrenal glands. For that reason he thought that difficulties would arise if the new compound were used as a "blunderbuss" agent to in-

vestigate one phenomenon.

They had sought the help of workers at the Medical Research Council who had found that when the compound was injected intraperitoneally into test animals no effect was produced on the animals' sensitivity to tuberculosis. The speaker thought that perhaps the animals' steroids provided the first clue to a new field in chemotherapy like that opened by the discovery of antibiotics. Steroids might be found to not only combat infections but to act prophylactically.

THE CHAIRMAN said that the authors' progress in breaking new ground in the chemotherapy of pathological pro-cesses would be followed with interest.

Estimation of Ascaridole

THE B.P. iodometric method for the determination of ascaridole gives results different from those obtained by the polarographic method. In the official assay process the calculation of results is based on a factor which has been derived empirically. Using a product which is considered to be 100 per cent. ascaridole, the B.P. assay and factor gives 110.4 per cent. as the result. To investigate the dependence of the calculated percentage on the weight of sam-ple used in the assay various oils of chenopodium and samples of ascaridole were examined by the official method under identical conditions (except for weight of sample used). It was found that the weights of ascaridolc (as determined) were not proportional to the weights of sample used. constant factor (as given in the B.P.) is therefore impracticable. Comparison of results of the official and the polarographic methods suggested that a quadratic expression should be used in the place of the constant factor. An expression was devised, and using it, results in agreement with those obtained polarographically were obtained.

The authors are A. H. Beckett and G. O. Jolliffe (pharmaceutical chemical laboratories, Chelsea School of Phar-

The paper was read by Dr. Beckett, who explained that a complementary paper giving details of the "pure ascaridole" referred to in the present paper was being prepared. He regretted that he was unable to put those details before the meeting as the work was not complete and pointed out that whatever was the constitution of the "pure ascaridole" used, the criticism of the British Pharmacopæial as-

say method was still valid.

Opening the discussion, THE CHAIR-MAN asked whether, in view of the dose range, the variations referred to had any practical value. From the analytical point of view, of course, they were extremely important. Dr. G. E. FOSTER, Dartford, agreed that the results of the B.P. assay did appear to vary with the weight of sample uscd. He suggested that Dr. Beckett's method was also empirical: he had admitted that he had not established that his standard sample was of 100 per cent. purity. He felt that the B.P. method

was satisfactory as a comparative method, and pointed out that work done in Tokio recently involved assay by infra-red absorption. The results with those from the B.P. method.

In reply, Dr. Beckett agreed that the results depended upon a basic sam-

ple but the significant fact was that he and his colleagues had been able to prepare a sample of ascaridole giving a result of 110.4 per cent. by the B.P. method. There was, therefore, no correlation. The quadratic function proposed did eliminate variation in the results. The infra-red method was being considered.

Correction.—In the discussion on the paper "Chemical Evaluation of Antacids" (p. 238) Dr. W. Mitchell, London, pointed out that although the British Pharmacopæia suggested that magnesium trisilicate could be made by reacting a magnesium salt with water-glass it could also be made by reacting magnesia with silica gel.

CONFERENCE EXCURSION

All Aboard for Greenwich

AFTER taking lunch in the buffet restaurant of the Royal Festival Hall, London, on September 2, members of the Conference found that for the Conference river excursion on which they were to embark, a perfect after-noon awaited them. That discovery was the more pleasant in view of rain and threatening weather in the morning. The river looked gay. A fresh breeze, particularly welcome to science session attenders, in places whipped the sky-blue surface of the river into tiny white horses and brought with it the peculiar odour of the Thames redolent of the sea. The party boarded four 200-seat launches, and as the boats moved downstream a guide on each pointed out the outstanding and historical features that could be seen on the river banks. As at least one boat passed Essex steps soon after the commencement of the voyage attention was drawn to the fact that at the top of that former access to the river stands the office of The Chemist and DRUGGIST. Other features in which members took special interest were Somerset House, H.M. Customs and Excise House, and ocean-going steamers in the Pool of London.

On arrival at Greenwich pier, after a voyage of fifty minutes (for which the precaution of taking sea-sickness remedies reported to have been adopted by some members seemed hardly necessary) the party split into a number of groups. They were taken in turn round the Royal Naval College, where Commander J. L. Blackham (commander of the college) explained some of the college's history

Although the land had belonged to the Crown since 1426, it was in the time of William and Mary that the college building took its present form.

Mary commissioned Wren to design a hospital for disabled seamen around an existing Queen's House and stipulated that the house should have a vista to the river. In 1873 the hospital was taken over for its present purpose of a naval "university." Members of a naval "university." Members were shown the collection of portraits of Admirals of the 1939-45 war by Oswald Birley, and the King's anteroom which are not normally on show to the public; the painted hall now used as the officers' dining room; and the chapel.

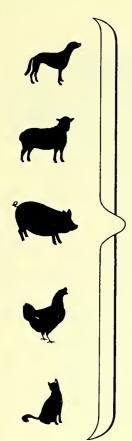
The parties were next taken to the National Maritime Museum where, with the help of guides they saw models of famous British and foreign ships, figureheads, historical relics such as swords and binnacles, a model of the battle of Trafalgar and portraits of outstanding naval personalities. Particular interest was taken in navigational instruments such as astralobes, time-keeping devices (including hour-glasses sun-dials and chronometers) and sex-

Particularly well-timed between the visits to the two buildings, tea was taken in the sun on the lawns of the

Museum, overlooking Greenwich Park. The return to the Festival Hall was made by launch and buses were waiting to take members to the Conference

Film Strip of Exhibition.—The production of a film strip as a permanent record of the Conference historical exhibition is being undertaken jointly by the Films and History of Pharmacy Committees of the Pharmaceutical Society. Costs of production are being borne by Distillers Co. (Biochemicals), Ltd., Speke, Liverpool, 19.

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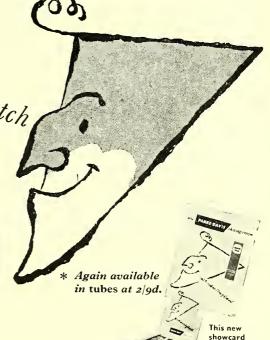
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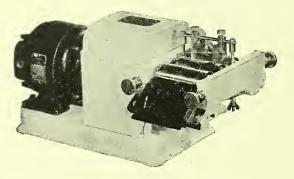
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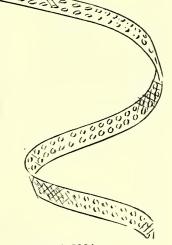
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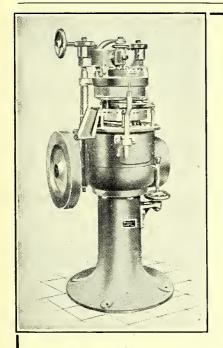
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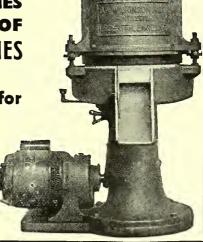


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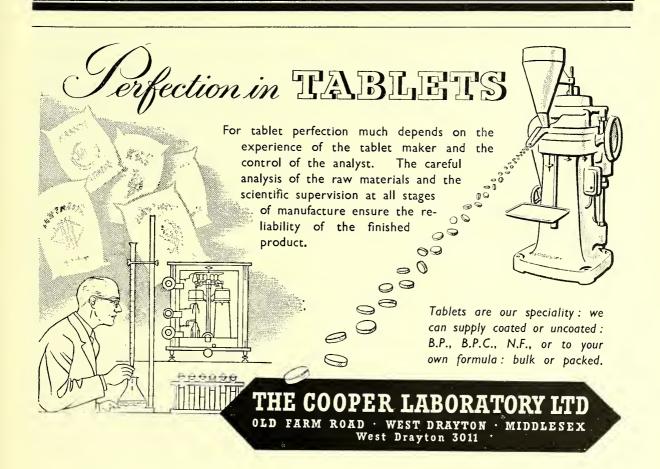
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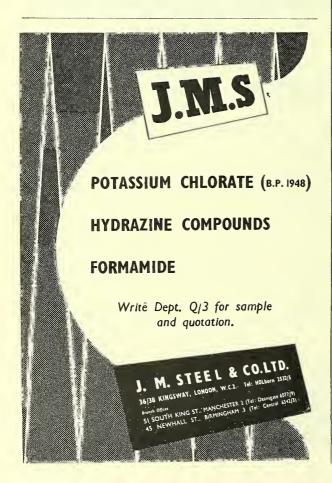
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46 PENTON STREET, LONDON, N.I

Telephone: TERMINUS 6562

customers_if you

SOAPLESS OIL SHAMPOO

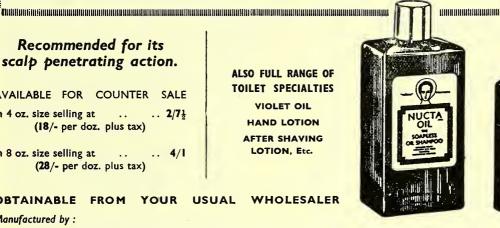
Recommended for its scalp penetrating action.

AVAILABLE FOR COUNTER SALE

In 4 oz. size selling at (18/- per doz. plus tax)

In 8 oz. size selling at (28/- per doz. plus tax) ALSO FULL RANGE OF TOILET SPECIALTIES

VIOLET OIL HAND LOTION AFTER SHAVING LOTION, Etc.





OBTAINABLE FROM YOUR USUAL WHOLESALER

Manufactured by:

STEWART, GOODALL & DUNLOP LTD.

PRINCES 12 la STREET EDINBURGH

Go Ahead RM-GLO



VIGILUX Electric **BLANKET**

Pat. No. 671239 with FINGER-TIP BEDSIDE CONTROL

The only Blanket control which is infinitely variable, self-compensating and sensitive to bed and body temperatures.

★ The VIGILUX (Regd.) has all the luxury features of the Warm-Glow single-heat Blanket—plus finger-tip bedside temperature. control, and many other refinements. The full size woollen blanket is part of the bed-The clothes and is not removed before retiring. Waterproof element and first class workmanship gives it a higher safety factor than any other blanket on the market. Shockproof and washable.

ASK YOUR

WARM-GLOW Single Heat **ELECTRIC BLANKET**

★ WARM-GLOW were first to introduce natural dissipation control in 1934 and full size fleecy wool blankets in attractive pastel colours. In 1948 we were again first with the waterproof element

On size and specification, Warm-Glow value-for-money is head and shoulders above all competitors.

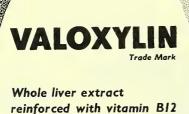
WARM-GLOW SOIL HEATERS

STOCK and SELL WARM-GLOW-





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For the treatment of pernicious anaemia with or without neurological manifestations and for those other types of macrocytic anaemia which also respond to liver therapy. For sprue and as a general tonic.

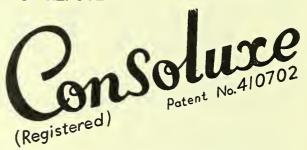
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SUPERFINE QUALITY
ALL WOOL SANITARY TOWELS

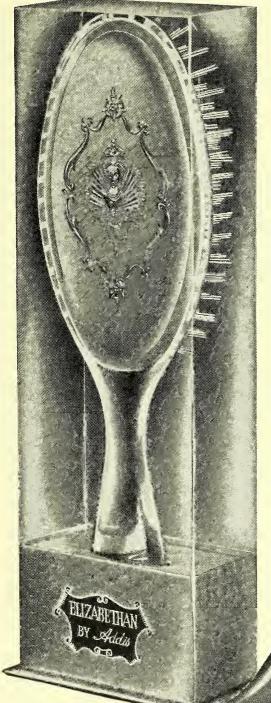
LOOPED ENDS NON - ABSORBENT BACK

WHOLESALE ONLY

ROBERT BAILEY & SON, LTD.

SURGICAL DRESSINGS MANUFACTURERS
DYSART STREET. GREAT MOOR. STOCKPORT
DYSART STREET WINDISPUTED" STOCKPORT





INTRODUCING

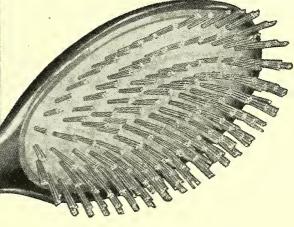


The first cushion brush with a decorated back

The new Addis "Elizabethan" hairbrush is as modern as the reign—it is the first brush to combine a cushion base for its nylon tufts, with a decorated plastic back. Although this is not a "Coronation" line it will be seen that the attractive silvered design on the back is Elizabethan in motif. This is plated on the plastic to achieve an effect never before used in the decoration of a hairbrush.

The "Elizabethan" will not only sell well in this Coronation year—but also for many years to come. It is made in the usual Addis jewel colours (moonstone-blue, zircon-green and pink topaz) so that other Addis combs and mirrors match it. Packed in a special display box which shows both the cushioned tufts and decorated back.

Retail price 11/6d. each. Trade price 79/2d. per dozen.



ADDIS LIMITED, Brushworks, Hertford

A. SEARLE & C.

SURGICAL INSTRUMENT MANUFACTURERS



Syringe Steriliser with Extending Rack

WHOLESALE AND EXPORT



Syringe Steriliser Tray



Ligature Winder



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HYPOSULPHITE SODA
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SOFTEX



RETAIL PRICE ONLY 1/-

The hygienic new chlorophyll-treated Softex has already created a wide public demand, a demand that will stay—be ready to meet it!

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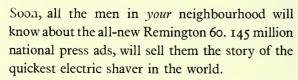
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REMINGTON

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already in tremendous demand!



They'll see the Remington 60 in big national press spaces. They'll read about its all-new design, its unique contour-curved cutting heads, its smooth, trouble-free performance. They'll hear about the Remington 60 everywhere; they'll want it from you.

Get your order in NOW

Don't miss your share of Remington 60 business your share of the profits to be made. Heavy demands make it imperative for you to stock up now — to get in early on the biggest shaver-sale success ever.

And don't forget to ask for your share of Remington publicity too! You can have 50-50 dealer advertising, free blocks for your own ads, and a wide range of solid selling display material to link up with the tremendous volume of national consumer publicity. Make a real splash on the '60'—it's worth your while!

145,000,000 ads to build up your profits!

Starting this month, 145 million ads, will appear in these big-circulation papers and magazines:-

Daily Express Daily Herald Daily Mail **News Chronicle Evening News**

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The Star Sunday Express Sunday Dispatch

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Plus Posters! Plus point of sales publicity! Plus the biggest and most original promotional schemes!

Write NOW to-

REMINGTON RAND LTD, Shaver Division, 1-19 New Oxford Street, London, W.C.1

ESTABLISHED 1866



LONDON

for

PILLS TABLETS CAPSULES

PESSARIES · SUPPOSITORIES · SOLUTION TABLETS
PENICILLIN PRODUCTS · OINTMENTS FOR THE EYE
SOFT GLYCERIN LOZENGES · PACKED PHARMACEUTICALS
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POTTER'S LAUNCH NEW LINE-

the pastilles Chemists said were wanted. with a

sugary taste

Same fighting formula and same price as its companion product with which it will get

* Order THROUGH WHOLESALERS ONLY please!

Petter's

PASTILLES

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CRYSTALLISED **PASTILLES**

are READY NOW in this attractive 1 doz. display box. Retail price 1/8. Trade price 11/- a doz. (plus Purchase Tax, 2/9 doz.)

National-scale

Big spaces in the National and Provincial press and top-circulation magazines have been booked to back Potter's Catarrh Pastilles and Potter's new Crystallised Pastilles together. First announcement appears in the Daily Mail's largest advertising space on Thursday, Sept. 17th, followed by powerful publicity throughout the cough/cold pastille 'season'.

STOCK UP NOW! Have Potter's Catarrh Pastilles ready for regular users. Sell Crystallised Pastilles to those who prefer their 'sugary' taste. Recommend them for children.

Pastilles", the usual Potter's Catarrh Pastilles will be supplied

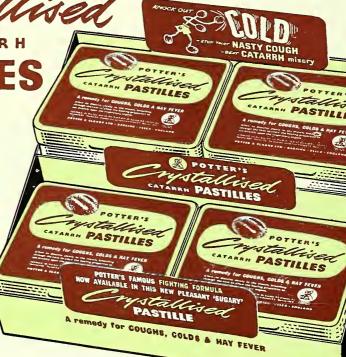
Advertising

POTTER'S CATARRH **PASTILLES**

displayed in the striking 1 doz, container. Retail price 1/8. Trade price 11/- a doz. (plus Purchase Tax, 2/9 a doz.)

* Unless you specify "Crystallised

Potter & Clarke Ltd · River Road · Barking · Essex





Charges to pay RECEIVED Central Telegraph Office, E.C.I

POST



W1



631 3.45 PM

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RESPONSE TO NEW PACK OUTSTANDING STOP STOCK

RECEIVED MONDAY PRACTICALLY CLEARED STOP PLEASE TER VERY URGENT ORDER FOR FIVE

Lavender Talc 2/6

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GROSS TOILET SOAP

40

GROSS SHAMPOO AND counting words telephone "IELEGRAMS ENQUIRY" or call, with this form and if naccible the envelope enquiries should be accompanied by this form and, if possible, the envelope



Bath Cubes 5½d. each, box of six 2/9

Two Shampoos 7d.

Field's

162 NEW BOND ST., LONDON, W.1

J. C. & J. FIELD LTD.

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all supported by intensive medical propaganda and in steady demand

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Vitamins B & C with Minerals

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'SANESCOL'

for Mucous and Ulcerative Colitis etc.

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'SOROSIL'

Dermal Ointment

H. R. NAPP Limited, 3&4, Clements Inn, London, W.C.2.

An entirely New Market is being created by these fast-selling L'OREAL HAIR BEAUTY PRODUCTS

Until recently, British women have been more conservative than French women in their acceptance of hair beauty aids. But this attitude is fast changing as a result of the successful launching in this country of three new French products - TRESS (known as Oreal Rege in France), TRILL (Bio-dop in France), and COLORAL. All products of L'Oreal, Paris. British women have been quick to realise that these outstanding hair beauty products add

remarkably to the attractiveness of their hair. Hundreds of thousands of women who never previously used hair beauty aids are now using one or more of these products. Thus an entirely new market is being created, and steady advertising pressure will ensure that this is extended and developed to the full. Stock these three fast-selling lines, and you will be certain to increase your sales and your profits.



TRADE PRICE 6/21d. per doz. cards 75% TAX 4/8d. per doz.

RETAILERS MARGIN 3/11d. per doz. RETAIL PRICE 1/2d, per card of two rinses

75% TAX 10/9d. per doz. RETAILERS MARGIN 6/11d. per doz.

RETAIL PRICE 2/8d. per bottle



Trill

TRADE PRICE 13/8d. per doz.

75% TAX 10/3d, per doz.

RETAILERS MARGIN 6/1d. per doz.

RETAIL PRICE

ARE YOU CASHING

Marketed by GOLDEN LTD · 2/4 DEAN STREET · LONDON · W.I · Ger. 4926



BIRMINGHAD

FEEDING BOTTLES

SCREW CAP TYPE

offer the following advantages:-

- Breathes as it feeds.
 - 2 Milk flows unimpeded.
 - 3 Wide mouth for filling.
 - 4 Teat securely held non-slip.
 - 5 Hermetical sealing filled or empty.
 - 6 Teat reverses and keeps sterile when not in use.
 - ·7 Feeds for 24 hours can be prepared, stored safely, used when required.

MADE IN BIRMINGHAM · ENGLAND

144 OAKFIELD ROAD, SELLY OAK, BIRMINGHAM, 29



Containing 0.3 gm. stabilised Ferrous Gluconate.

At present being extensively advertised and detailed to the medical profession in your area.

Indicated in the treatment of nutritional iron deficiency anaemias and the iron deficiency anaemias of pregnancy.

PACKS: bottles 100 tabs. — 1,000 tabs.

PRICES ... 36/- per doz. plus P.T. -28/- (each) plus P.T.

ELIXIR CEREVON, providing a liquid preparation containing Ferrous Gluconate together with the important factors of the B complex, is also available.

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TEL. 3251-5

Tab. Cerevon are available for prescription on form E.C.10.

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IN AMPOULES FOR INJECTION AND CAPSULES FOR ORAL ADMINISTRATION

Absolutely dependable and unapproachable in activity and potency

A COMPLETE RANGE OF STANDARD PREPARATIONS AVAILABLE FOR ALL ENDOCRINE CONDITIONS. SPECIAL FORMULÆ AND PRESCRIPTIONS ALSO COMPOUNDED

Sole Manufacturers of VITA-E 75 i.u. Gelucaps, the new and effective treatment for cardiovascular-renal diseases. (Extensively prescribed today under National Health Service). Packed in 90's, 120's and dispensing packs of 500's and 1,000's.

SUPPLIED THROUGH CHEMISTS AND TO MEDICAL PROFESSION ONLY

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THE BIOGLAN LABORATORIES LTD. HERTFORD, HERTS

Phone: CUFFLEY 2137

Telegrams and Cables: "BIOGLAN TOLMERS."

Cannon Quality and variety help to build your sales!

Cannon research and progress have built up their world-wide prestige. Quality and variety, the keynote of their products; service and co-operation, the basis of their business. For 1953, Cannon have introduced the series of Capitol Bathing Caps, yet another addition to their wide range of quality goods, which will again this year be creating world-wide interest and demand. Now is the time to check your Cannon stocks. All products obtainable from your usual wholesaler.

CANNON RUBBER MANUFACTURERS LIMITED

(Dept. CDI3) ASHLEY ROAD, TOTTENHAM LONDON NI7



MODERN Teats and Soothers

WELLBORN Teats

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CAPITOL Range of BATHING CAPS

DOLPHIN AND RIPPLE Hot Water Bottles

NOAH'S ARK and COTTAGE Series of Novelty Hot Water Bottles

CANNON Multi-purpose RUBBER MAT

The CANNON RUBBER BUCKET

Announcing Big Introductory charged as bonus for the DISPE **WICK VAS**

The Dispel Wick Vase will be an instant hit with the millions of women who already buy wick deodorisers for their kitchen and smallest room. Carrying no label whatsoever and resembling a pretty vase, the Wick Vase is the best deodoriser for the best room!

You make more actual cash profit than on any other wick deodoriser—9d. per bottle, standard. from your wholesaler at once-get your Christmas stocks on bonus terms-the "closed window" season is coming! Terrific advertising is on the way.

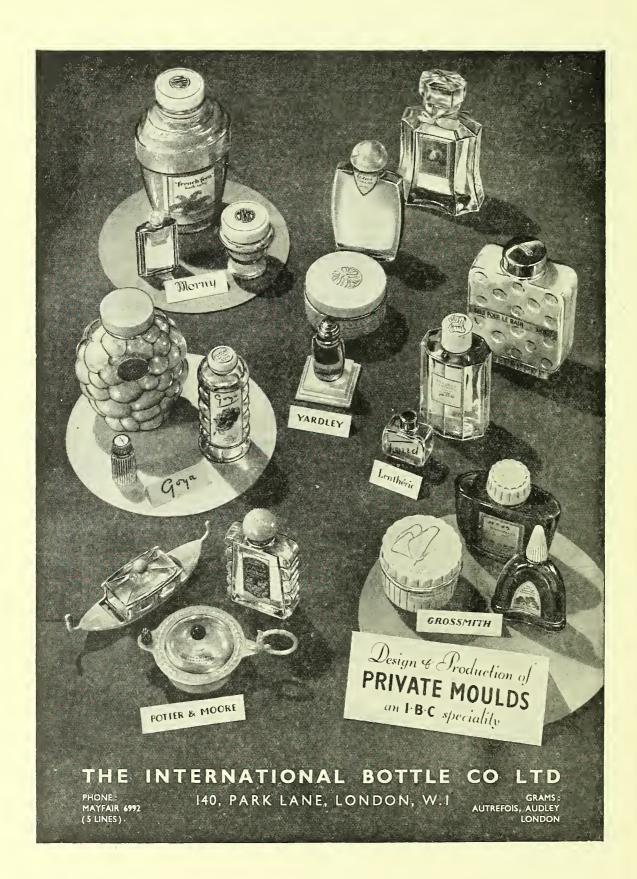
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Advance Industries Ltd., 87 Regent St., W.1.

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The Chemists' chlorophyll preparations

TOOTHPASTE

Kerofil was the first chlorophyll toothpaste to be offered to the pharmacist and it is still restricted to the pharmacist.

It pays the chemist

to display and recommend Kerofil.



LOZENGES

Quite the most pleasant way of taking chlorophyll, as pleasing as the old cachou, but much more far-



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THE ONLY POPULAR CHLOROPHYLL PREPARATIONS SOLD SOLELY THROUGH CHEMISTS

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Kerofil products are issued in attractive display outers and convenient showcards are always available on request.

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VALE OF BARDSLEY
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LANCASHIRE

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How STURGE pack CITRIC ACID

ANHYDROUS

An airtight pack, proof against damp and contamination is provided for Sturge citric acid anhydrous. The container has an "Alkathene" liner which is heat-sealed at the neck.

Citric acid anhydrous has a higher acid content (8.5%), for the same bulk and weight. Please ask for details.



JOHN & E. STURGE LIMITED

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A REALLY CONVENIENT PACK 1/6

PER SCREW LID TIN

NO MORE PRISING OFF LIDS WITH A THREEPENNY BIT OR FINGER NAILS!



Jelly Hand Cleansers are rapidly coming into regular use—sell the best and most attractively packed of all

EVERYONE NEEDS SWARFEGA

The finest jelly hand cleanser on the market

ORDER NOW and be sure to ask for the NEW PACK

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ULTRA VIOLET RAYS

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CREATE VITAMINS AND
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AND MANY OTHER AILMENTS

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provide the widest range of sun lamps for every purse

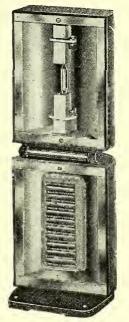
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ACTINA

The Portable Sun

is a boon for the whole family

- For the old-to relieve pains.
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- For the woman—to keep skin elastic, free from blemishes and beautifully tanned.
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The ACTINA contains a High Pressure 150-watt Ultra Violet quartz tube so powerful that on average skin only one minute's treatment at one yard distance is required, and a 400-watt black body element that can be used independently by means of a selector switch. Both ray sources and their reflectors are housed in a miniature double box of 5 lbs. weight, which folds up to $5'' \times 6'' \times 93''$.

PRICE £14. 14. 0
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PIRA Model

To millions of sufferers from rheumatic pains Infra Red rays offer relief.

The PIRA Model shown here has a powerful 600-watt black heat element with deep penetration. The temperature at which the element operates is strictly controlled to ensure minimum absorption in the outer skin layers, and so to allow the full 600-watt energy to react on deep lying muscles and joints directly.

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NURSE HARVEY'S BABY POWDER (with olive oil) is rapidly gaining popularity. Be sure to include a supply in your next order.

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The COOPER Brand Syringe Needles

HYPODERMIC NEEDLES

- Accles & Pollock Stainless Steel used throughout
- All needles hand pointed ensuring perfect bevel and

Expert makers of high-class hypodermic needles for half a century

COOPERS NEEDLE WORKS LTD

"HYPO" WORKS, PROSPECT HILL, REDDITCH, ENG.

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Manufactured by

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display the goods that are well advertised

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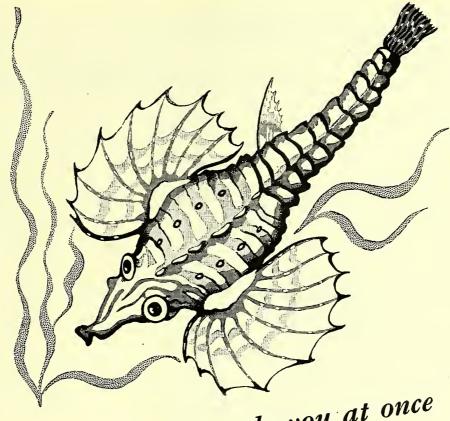
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Manufacturers: FISH OPTICAL CO. LTD.* McNeish House, 261 HARROW ROAD, LONDON, W.2
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Whiffens will supply you at once

BROMINE PREPARATIONS Potassium Bromide, Sodium Bromide **Ammonium Bromide and others**



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Telegrams: Whiffen, Norwest, London



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MAG. HYDRATE · MIST. MAG. HYDROX.

SUPPLIED THROUGH ALL WHOLESALERS Ьy THE SOLE MANUFACTURERS

THE WASHINGTON CHEMICAL CO., LTD WASHINGTON CO. DURHAM ENGLAND
LONDON OFFICE: 74 PALMERSTON STREET. MANCHESTER . 12

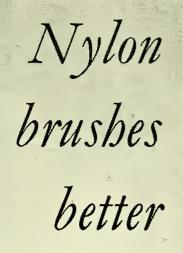
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IMPERIAL CHEMICAL INDUSTRIES LIMITED, LONDON, S.W.1



What a



Orders for this new EVAN WILLIAMS line have poured in so thick and fast that we shall have to deal with them in strict rotation.

Evan Williams



The fortunate ones who placed an order for Evan Williams Liquid Lanolin Shampoo at an early date may have already received their stocks-or they are on the way. If however you ordered later, your stocks may not come to hand so soon. We ask the indulgence of any of our customers who may still be waiting, and assure them that we are despatching orders as fast as is humanly possible. We have decided to postpone our advertising campaign from August to September thus ensuring that none of our customers is faced with a sudden demand that he cannot satisfy.

Liquid Lanolin Shampoo

42/- per gross (plus 10/6 purchase tax)

Enquiries invited for—

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BARBITURA

QUINALBARBITONE SODIUM, CYCLOBARBITONE,
PHEMITONE, BUTOBARBITONE, AMYLOBARBITONE,
HEXOBARBITONE, ALLOBARBITONE, PHENOBARBITONE,
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Manufactured by

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12 BOXES OF THE

NEW IMPROVED KOTEX

FOR THE PRICE OF 11!

BUT ONLY UNTIL SEPTEMBER 30th!

Extra profits, sure profits for you when you stock the new Kotex. *Because* until September 30th, our free goods offer gives you 12 2/3d boxes for the price of 11! *Because* women will soon discover that the improved "Stay-Soft" Kotex is more comfortable, more convenient! *Because* the new immaculate box with its eyecatching green wrapper is ideally suited for display! *Because* the wrapper tears off easily and effectively hides the identity of the box when carried by your customers!

National Advertising in women's magazines will spread this exciting news about the larger, softer Kotex with loops and rounded ends to women everywhere in Great Britain!



THIS SPECIAL FREE GOODS OFFER ends September 30th!

During Free Goods Offer your price is 18/7d. per doz. boxes

Normal Trade Price per dozen boxes: 20/3d.

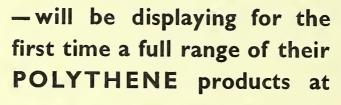
KOTEX with loops: Retail Price per box: 2/3d

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12 boxes for the price of 11!

CELLUCOTTON PRODUCTS LTD., CARKER'S LANE, LONDON N.W.5

FIBRENYLE LTD



The CHEMISTS' EXHIBITION

(The OLD HALL of the Royal Horticultural Society, Vincent Square, Westminster, London, S.W.1)

Sept. 7th to 10th, 1953

We invite you to visit our stand No. 17

The following NEW LINES will be of special interest to visitors





- ★ No. 5 ALL-PURPOSE ATOMISER
- ★ CLEAR BASE CREAM JAR
 (as illustrated)
- * 8. oz. OVAL BOTTLE
- ★ 4 oz. SPUTUM FLASK

157 DUKES ROAD, WESTERN AVENUE, LONDON, W.3

Telephone: ACORN 5073-4

The

SUPPLEMENT

Head Office: 28 Essex Street, Strand, London, W.C.2. Telephone: Central 6565. Telegrams: Chemicus, Estrand, London.

CLASSIFIED ADVERTISEMENTS MUST BE PREPAID. For rates see sectional headings

184 STRAND, ORRIDGE & COMPANY Tel.: TEMple Bar 9212/3 & 6340

CHEMIST BUSINESS TRANSFER AGENTS AND VALUERS WHOLESALE AND RETAIL

BRANCHES: BIRMINGHAM . SOUTHAMPTON . LIVERPOOL . SHEFFIELD . CARDIFF Irish Representative: Mr. J. A. Bassett, Ph.C., 57 Great Victoria Street, Belfast, Northern Ireland. Tel.: Belfast 27078

BUSINESSES FOR DISPOSAL

17/6 for 36 words (min.) then 4d, per word.

DUMBARTON. FOR SALE owing to death of proprietor, old-established pharmacy with optical practice in well populated district. Good turnover, accounts available. Excellent opportunity. Particulars from Wm. Ritchie & Son, Solicitors, 78 Church Street, Dumbarton.

APPOINTMENTS

per half-inch (min.) and pro rata.
Box 2/-

ADMIRALTY PHARMACISTS

ADMIRALTY PHARMACISTS
Applications are invited from Pharmaceutical
Chemists or Chemists and Druggists for posts
as Pharmacists in R.N. Hospitals and Medical
Depots at Home and Abroad. Salary scale
450 x £25—4575. Starting pay according to
previous professional experience, but candidates under 23 would enter at appropriate
point below minimum quoted, Allowance of
£25 a year payable in addition to holders of
£25 a year payable in addition to holders of
£25 prospects of promotion higher than M.P.S.
Foreign Service Allowance payable overseas.
Frospects of promotion to higher ranks. Superannuation benefits under National Health
Service (Superannuation) Regulations 1950:
deduction of 6 per cent, made from salary
on that account. (Pharmacists due to be
entered for compulsory National Service
cannot be accepted as candidates.) Apply to
Medical Director-General of the Navy, Admiralty, Queen Anne's Mansions, London,
S.W.1. (C 5866)

C 5866

CRUMPSALL HOSPITAL,

MANCHESTER, 8

(Adult General, 1,225 Beds)

Vacancies exist for two pharmacists and applications are invited for these posts. Salary and conditions of service as laid down by the Whitley Council.

Applications, stating age, nationality, details of experience, together with the names and addresses to two referees, are to be sent to the undersigned as soon as possible, Dept.

A. T. SAMPSON, Group Secretary. C 161

MAIDENHEAD GENERAL HOSPITAL, ST. LUKE'S ROAD, MAIDENHEAD

DISPENSER required from September 26 to work three-quarters of full time, assisting Chief Pharmacist, Salary on national scale, Applications, giving qualifications and experience, with copies of testimonials, to the Hospital Correlator.

HACKNEY GROUP HOSPITAL

MANAGEMENT COMMITTEE,
LONDON, E.9
PHARMACIST required for Hackney Hospital.
Whitley Council salary and conditions. Applications to Secretary, Hackney Group Hospital
Management Committee, London, E.9. C 156

LEICESTER ISOLATION

HOSPITAL AND CHEST UNIT, GROBY ROAD, LEICESTER
Applications are invited for the position of Senior Pharmacist at the above hospital. The appointment will also carry responsibilities for duties connected with the Central Purchase and Supply of drugs, etc., and work at other hospitals in the group under the direction of the Chief Pharmacist. The commencing salary, depending on experience and previous service, is within the scale of £525 p.a. x £25 to £625 p.a.

oly, with the names of two referees, to Chief Pharmacist. C 5885

PRESTWICH (MENTAL) HOSPITAL

SENIOR PHARMACIST required at Prestwich (Mental) Hospital. Applications should be sent to the Secretary, Prestwich Hospital, Prestwich, nr. Manchester, not later than Saturday September 12, 1953. C 5909

REDHILL COUNTY HOSPITAL,

REDHILL COUNTY HOSPITAL, EARLSWOOD COMMON, REDHILL, SURREY

Applications are invited for the post of Pharmacist under Chief Pharmacist at Redhill County Hospital, Salary on the scale £450 x £25—£575 plus other special allowances, Wide variety of work undertaken including sterilisation and small-scale manufacturing.

The post is subject to the provisions of the N.H.S. (Superannuation) Regulations. Cottage available for married man. if required, at rental of 10s. per week exclusive. Applications, stating age, qualifications and experience (previous bospital experience not essential) together with the names of two referees, to be sent to the Group Secretary at Redhill County Hospital, Earlswood Common. Redhill, Surrey, immediately. C 5914

WEST LONDON HOSPITAL, HAMMERSMITH ROAD,

HAMMERSMITH ROAD,
LONDON, W.6
APPLICATIONS INVITED FOR THE
APPOINTMENT OF
PHARMACIST (MALE OR FEMALE)
at the above general teaching bospital, where
there is a busy Pharmaceutical Department
and a wide variety of experience is offered.
Salary scale £450—£575 per annum, plus London Weighting.
Other terms and conditions in accordance with
the Pharmaceutical Whitley Council.
Age, qualifications, experience, names of two
referees to Secretary.

C 5887

THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET,

GREAT ORMOND SIREEL,
LONDON, W.C.1
PHARMACIST
Applications are invited for the post of Pharmacist at this hospital. Salary within the Pharmaceutical Whitley Council Scale (£450 x £25-£575) plus London Weighting. £25 for recognised higher qualification. Apply by letter to Chief Pharmacist. C 166

THE LONDON HOSPITAL,
WHITECHAPEL, E.1

has vacancy for Pharmacist. Applicants must
be registered Pharmacists and salary scale
will be £450 (age 23) x £25—£575 according to
previous experience and service. Dining-room
facilities available. Write Secretary. C 165

THE MILLER GENERAL HOSPITAL, S.E.10 (180 Gen. Beds, Category III)

CHIEF PHARMACIST required, Wide experience similar hospital (with large out-patients' dept.) and in modern pharmaceutical techniques essential. Whitley Council salary and conditions. Applications and testimonials to Sec. G. & D./H.M.C., St. Alfege's Hospital, Greenwich, S.E.10. C 5880

THE MILLER GENERAL HOSPITAL (180 Beds).

HOSPITAL (180 Beds),
GREENWICH, S.E.10

Applications are invited for the post of Pharmacist in a well-equipped pharmaceutical department at the above hospital. Inspection of the department may be made by arrangement with Chief Pharmacist, Salary and conditions of service as laid down by the Pharmaceutical Wbitley Council. Applications, giving full details should be made to the Secretary, G. & D./H.M.C., St. Alfege's Hospital, S.E.10, as soon as possible.

C 5888

THE UNITED **NEWCASTLE-UPON-TYNE** HOSPITALS

HOSPITALS

Applications are invited for the post of PHAR-MACIST (male or female) at the Royal Victoria Infirmary, Conditions of service in accordance with the recommendations of the Pharmaceutical Whitley Council, Applications, stating age, qualifications and experience, and giving the names of two referees, should be sent immediately to the House Governor and Secretary, Royal Victoria Infirmary, Newcastle-upon-Tyne.

C 5908

WEST MANCHESTER H.M.C., PARK HOSPITAL, DAVYHULME SENIOR PHARMACIST (M.P.S.) required for modern department. Whitley Council conditions. Salary £550 x £25 (3)—£625. Forms C 167

SITUATIONS OPEN

8/6 for 36 words (min.) then 3d. per word.

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

RETAIL (HOME)

AN EXPERIENCED ASSISTANT, unqualified. required for good-class dispensing business.
Congenial post. Thursday half-day, No duties.
Apply Epson, Chemist, 4 Gladstone Parade,
Edgware Road, Cricklewood, N.W.2. Phone:
Gla, 5314.

RISTOL. CO-OPERATIVE CHEMISTS. Gla. 5314.

C 4207

BRISTOL CO-OPERATIVE CHEMISTS,

LTD. Branch managerships. Further appointments due to be made September and October.

Permanencies, with superannuation. Modern living accommodation available (unfurnished).

Suitably experienced pharmacists invited to write for further particulars to Superintendent Chemist, Castle Green, Bristol, 1. C 4240

CATHOLIC PHARMACIST in industrial district of Staffordshire, proposing shortly to open branch shop, offers managership of present profitable business at salary of £800 p.a. plus share of profits, which should amount to £200 p.a. After twelve months a share in the business will be given, with option to purchase half-share outright or over a period. No living accommodation, but every assistance in finding digs" for single man. Box C 4247.

COSMETIC COUNTER HAND required, experienced, Acquainted with Rubenstein and leading agencies. The Kensington Pharmacy, 26-28 Kensington Church St., W.8. Phone: CXCFILIENT OPPORTUNITY for experienced. leading agencies. The Reliangeon Heading 26-28 Kensington Church St., W.8. Phone: C 4254
EXCELLENT OPPORTUNITY for experienced pharmacists to join progressive organisation with shops in Essex, Middlesex and suburban London, as branch managers. Good salaries and opportunities for promotion. Modern well-fitted pharmacies with good supporting staffs, Permanencies with superannuation benefits, accommodation in some instances, Apply, giving details of experience, etc., stating salary required, to Box C 4258.
EXPERIENCED UNQUALIFIED assistant, male, required for N.H.S. dispensing, chiefly. Salary £9 per week. In first instance apply by letter only, stating age, married or single and particulars of past experience please. Lloyds Chemists, 260 Upper St., Islington, London, N.1.

C 4251 N.1. C 4221
LADY PHARMACIST required for dispensing and light counter work. A good salary and excellent working conditions are offered. S. P. lles, 30 Highbury Park, London, N.5. Phone: excellent working conditions are offered. S. P. Iles, 30 Highbury Park, London, N.5. Phone: Canonbury 2666.

Canonbury 2666.

Cal244
LIVERPOOL. Qualified manager required for new pharmacy, permanent position. Salary 8800 per annum. No Sunday or half-day closing duties, full counter staff and dispensing assistant engaged. Apply to Metcalfe & Co. (Liverpool), Ltd., 34 Landford Avenue, Liverpool, 9,

MAIDSTONE, KENT. Qualified assistant required mainly for dispensing duties. Permanent and congenial post with superannuation scheme. Provision of house will be considered if necessary. Stonham & Son, Ltd., 70 Bank St., Maidstone.

C4252
MID-KENT. Unqualified assistant. Duties mainly dispensing. Bonus and superannuation schemes, Permanency, Box C4253.

PART-TIME PHARMACIST required for dispensing duties some evenings 6-8, 8s. hour. Permanency. Apply to Kendalc Dispensing Chemists, 51 Exmouth Market, E.C.1. Phone: Terminus 5216.

PHARMACIST (lady) required for dispensing and occasional counter duties in pleasant pharmacy pear Finsbury Park, North London. Please give details of experience and salary. Box C 4245.

PHARMACIST required as branch manager, Salary up to £14 14s. per week, plus house

Box C 4245.

PHARMACIST required as branch manager.
Salary up to £14 14s. per week, plus house accommodation. Average trade £170 weekly.
Applications with full particulars to: General Manager, Co-operative Society, Ltd., Pontypool. Mon.

C 4260

Manager, Co-operative or C 4260 pool, Mon.

PHARMACIST REQUIRED with view to management of a middle-class pharmacy. Good salary and an excellent flat available. Piease give details of age and experience. S. P. Iles, 30 Highbury Park, London, N.5. Telephone: Canonbury 2666.

QUALIFIED MANAGER and dispenser wanted for good-class country town business, No N.H.S. dispensing. No Sunday duty. Stock-keeping and buying, Good knowledge of high-class cosmetics an advantage. Some photographic. All male competent staff. Particulars and salary, interview later. H. R. Camplin, 5 West St., Horsham, Sussex. C 4171 YORK CO-OPERATIVE Chemists' Society, Ltd., require qualified branch manager, male or female. Salary and bonus, commission on dispensing and rota fees, Superannuation scheme, transfer clause. Good conditions. Living accommodation available. Applications, giving full particulars to York Co-operative Chemists' Society, Ltd., 22 Railway Street, York. Chemists Society, Edit, C 4223
YOUNG LADY (unqualified) required as dispenser and for light counter duties, A good salary is offered. Hours 9 o'clock to 6 o'clock p.m. Thursday half-holiday, Pleasant middle-class pharmacy in North London, S. P. Iles, 30 Highbury Park, London, N.5, Canonbury 2666.
C 4246

LOCUMS WANTED

BIRMINGHAM. Qualified locum for long or short periods until permanent manager/ess is found. Shop well staffed, Optical work avail-able if desired. Apply W. Beck & Sons, Ltd., 75 Winson Green Road, Birmingham, 18, Phone: Edgbaston 1839. C 4263

RETAIL (OVERSEAS)

RETAIL (UVERSEAS)

A QUALIFIED MAN, preferably single, required to manage important English pharmacy in Hong Kong. Only men who have received a first-class training in all branches of pharmacy need apply. Living accommodation, staff pension scheme, passage paid. Excellent prospects for the right man. Reply A. S. Watson & Co., Ltd., 64 Crutched Friars, London, E.C.3.

WHOLESALE

A REPRESENTATIVE is required by a leading firm of ethical pharmaceutical manufacturers for a post in Northern Ireland. Candidates with comprehensive pharmaceutical background, and preferably with representative experience are invited to apply for this progressive and interesting position. The main duties involve interviewing medical men, both in general practice and hospitals with, in addition, visits to pharmaceutical, hospital and trade contacts. Local residence necessary, Remuneration comprises salary, bonus and expenses and there is a contributory superannuation scheme, Reply, giving full details of experience and qualifications to Box C 5902.

ALLEN & HANBURYS, LTD., Bethnal Green, London, E.2, require a pharmacist (male) to act as technical assistant in sales department. The post is superannuated and a five-day gweek operates. Apply, in writing, giving details of age, education, qualifications, etc., to Personnel Manager.

C 5873

ALLEN & HANBURYS, LTD., Bethnal Green, London, E.2, require young pharmacists (male) to act as medical representatives. Successful applicants will receive training before taking over territory and all posts are superannuated, Apply in writing, giving details of age, education, qualifications, etc., to Personnel Manager.

C 5872

BURROUGHS WELLCOME & CO, have a vacancy in their Overseas Division in London. Preference given to a Pharmacist, qualifications being essential unless possessing a thorough pharmaceutical knowledge and experience. Post calls for good commercial aptitude, initiative and salesmanship. Age 25 to 40 years. Knowledge of export procedure desirable. Good health, sound general education and good personality are essential and candidates must be willing to travel overseas if required. Applications, giving full details of education, previous business experience, usual personal details and salesmanship. Age 25 to 40 years. Knowledge of cxport procedure desirable. Good health, sound general education and good personality are essential and candidates must be willing to

COOLTAN LABORATORIES need capable sistant works-foreman. Experience with leading toilet and medicinal knowledge tableting advantage. State age, salary, capabilities: Cooltan, 19 Thames St., Hampton.

Hampton. C S892
EXPORT. Pharmacist with some experience export routine aged 30 to 35 required by provincial manufacturing chemists. Five-day week, pension scheme. Applicants should state full particulars education, commercial experience, etc. Box C 5910.

C. J. HEWLETT & SON, LTD.

Invite application for two additional pharmacists in their London Factory, to take charge of new laboratories as follows:—

Aseptic Department: Male or female pharmacist, fully experienced in modern aseptic technique. cist, fully experienced in modern ascepte technique.

Analytical Department: Male pharmacist with

Analytical Department: Mate pharmacist with experience in analytical control of galenicals and medical and veterinary specialities. Write with full details of age and experience to Works Director—C. J. Hewlett & Son, Ltd., 35-43 Charlotte Road, Gt. Eastern St., London, E.C.2.

EVANS MEDICAL SUPPLIES, LTD., have a vacancy for a representative to call on chemists in Lancashire. Applicants must be under 35 years of age with recent experience of retail pharmacy. Apply, in writing, to the Home Sales Director, Evans Medical Supplies, Ltd., Speke, Liverpool, giving full details of career, C 5868

LEEDS AREA. Representative required by London firm, must have good knowledge of surgical instruments and hospital equipment. Previous experience essential and connections an advantage. Good salary and bonus, with car if required, for suitable applicant. Apply JGE Dept., Box C 5806.

MANAGER REQUIRED for wholesale warehouse. Excellent prospects for hard worker, capable of administrating buying and staff control. Apply, in writing, stating full details experience, age and salary required, to Box C 4235.

MEDICAL REPRESENTATIVES, British substidiary of leading American ethical pharmacutical house has vacancies for medical representatives in all areas of U.K. Pharmaceutical qualification essential, Good starting salary and expenses, Car provided, Applications with full particulars of age, qualifications, experience and salary required in writing only to the Manager, Pfizer, Ltd., 137-139 Sandgate Rd., Folkestone, Kent. C 4261 NORTH SOMERSET AND GLOUCESTER AREA, A well-known ethical house invite applications for the position of medical representative on this territory, Previous experience while desirable is not essential but applicants should reside on and know the territory well, have a good pharmaceutical background and preferably be car owner. Full details in confidence to Box C 5891. MEDICAL REPRESENTATIVES. British sub-

dence to Box C 5891.

PHARMACY GRADUATE is required for a post mainly concerned with control of asepsis and sterility in a modern Edinburgh factory. Successful candidate will be required to carry out development work on sterilisation procedures and may be expected to superintend other laboratory activities. Pensions scheme in operation, Apply Box C 4256.

PILL AND TABLET COATER required immediately with experience of coloured coating. Five-day week and pension scheme in operation, Apply, in writing, to Technical Director, Beecham (Northern), Ltd., Westfield Street, St. Helens, Lancs.

C 4232

PRICER/INVOICE CLERK, either sex, fully

PRICER/INVOICE CLERK, either sex, fully experienced in drugs, ethicals, proprietaries, tablets, chemists' sundries. Good at figures. Permanency. Unusual opportunity. Apply with full particulars to Biorex Laboratories, Ltd., 47-51 Exmouth St., E.C.1. Phone: Terminus 5216.

S216. C 5905

REPRESENTATIVE REQUIRED to call on chemists in London by an old-established firm of manufacturing chemists with widely advertised lines, Applications are invited from men with proved sales record setting out particulars to Box CD 583, L.P.E., 110 St. Martin's Lane, London, W.C.2. C 5897

ALEX/PERPESENTATIVE Offseed colors.

Lane, London, W.C.2.

SALES/REPRESENTATIVE offered salary, commission, expenses, and opportunity of substantial income; must have established connection and experience in selling to chemists drugs, galenicals, dressings, plasters, proprietaries and chemists' sundries, Must be car owner, some Home Counties and London Territories vacant. Apply to Biorex Laboratories, Ltd., 47-51 Exmouth St., E.C.1, C 5906 tories, Ltd., 47-51 Exmouth St., E.C.1. C 5906 SCOTLAND. Applications are invited by well-known ethical house for the position of medical representative to cover the territory comprising Glasgow and district. The position offers real opportunity and prospects for a first-class man. Pharmaceutical qualification is not necessary but comparable knowledge is essential. Applicants must reside on and know the territory well. Remuneration; salary, commission and expenses. Write, in confidence, to Box C 5848.

'UNISEC' from the Single Unit to the Complete Pharmacy WRITE FOR YOUR COPY OF THE STANDARD REFERENCE OF PHARMACY FITTING

ERS of OLD 133/5 & 141/7 OLD STREET, LONDON, E.C.I

Situations Open-Continued

SCOTTISH REPRESENTATIVE required by company manufacturing specialities selling to a wide variety of wholesale and retail outlets. Salary, commission and car allowance to man capable of increasing existing connections. This is the opportunity for a really first-class man. Replies in confidence should state in detail experience, age and territory covered. Box C 5891

TABLET MANAGER

House of repute in North West require Pharmacist with good experience in this work as head of Tablet Manufacturing Department. Pension Scheme. 5-day week.

Full details with applications to Box C 5898.

THE BRITISH DRUG HOUSES, LTD., require a person with suitable qualifications for a position in their Technical Services Laboratory, Applicants should possess at least a B.Pharm, or Ph.C. qualification and be interested in the physico-chemical principles of modern pharmaceutical formulation. Some experience of this work and of research would be desirable but not essential. Salary according to experience and qualification. Apply, in writing, stating age, experience and salary required to Staff Manager (GMG/HGR M. 3135), Graham Street, City Road. N.1. C 5895

THE BRITISH DRUG HOUSES, LTD., require a woman pharmacist in their dispensary. The position would be suitable for a young graduate or a recently qualified woman pharmacist wishing to obtain practical experience. Five-day week. Sports club, etc. Apply, in writing, stating age, experience and salary required to Staff Manager (GMG/HGR M.3136), Graham Street, City Road, N.1.

C 5913

TOULET-PERFUMERY. Buyer's assistant re-

TOILET-PERFUMERY. Buyer's assistant required with good knowledge of the trade. Permanent progressive situation to the right person. Apply, in own handwriting, stating experience, age, and salary required, to Box C 5007

WHOLESALE (OVERSEAS)

A QUALIFIED MAN, preferably single, required to supervise manufacturing laboratory in Hong Kong. Ample scope for the right man to show his initiative. Living accommodation, staff pension scheme, passage paid. Reply A. S. Watson, & Co., Ltd., 64 Crutched Friars, London, E.C.3.

SITUATIONS WANTED

3/- for 18 words (min.) then 2d, per word, Box 1/-

RETAIL (HOME)

LADY DISPENSER; Hall certificate, experi-enced hospitals and general practice, requires post with doctors or hospital. Accustomed book-keeping and reception duties; car driver. Box C 4249.

WHOLESALE

SMART REPRESENTATIVE, age 36, tall. good appearance, education and address, car owner, requires position with reputable manufacturer. Highest refs. Known whole London area chemists and stores as representative to world-famous cosmetic house. Apply Box C 4160.

WORKS MANAGER, Aged 52, seeks post, 11 years with present company. Any executive position considered. Wide experience of trade, manufacturing and retail. Box C4230.

TABLETS. Advertiser with all-round experience desires position in London, Capable of taking control and organising tablet making department, Box C 4257.

department, Box C 4257.
REPRESENTATIVE with 20 years' experience calling upon doctors, chemists, hospitals, requires situation. South Wales area. Box C 4250.

AGENCIES

17/6 for 36 words (min.) then 4d. per word. Box 2/-

AGENTS REQUIRED (all territories) with ex-

AGENTS REQUIRED (all territories) with excellent selling connections with industrial laboratories, hospitals, research establishments, etc., for the sale of laboratory and chemical apparatus equipment, New and extensive range offers excellent prospects, Commission only. Box C 4255.

Box C 4255.

Bequire (all territories) with wholesale connection with the following trades—Grocery, Stationery, Hardware, Chemists—to handle nationally advertised quick-selling products. References essential. Box No. AC 81768, Samson Clarks, 57/61 Mortimer Street, London, W.1.

C 157
AGENTS wanted for England and Wales to

81768, Samson Clarks, 57/61 Mortimer Street, London, W.1.
Col57
AGENTS wanted for England and Wales to expand sales of established proprietaries. Contribution to expenses, Box C 4259.
AGENTS WANTED throughout U.K. with first-class connections, calling on chemists and/or opticians to handle new patented line. Generous commission and support to the right man. Write stating area covered. Eagle Grip Products, Ltd., 273 Walworth Road, London, S.E.17.

S.E.17. C 5911
AGENTS with good connections among wholesalers, packers, etc., for all parts of Great Britain to sell tablets on a commission basis. Dales Tablet Makers, Ltd., Barrows Lane, Steeton, nr. Keighley, Yorks.

AGENTS

having first-class connections with chemists and hairdressers required in several areas. Sole agencies and 20% commission on all orders from area. Apply in writing to Dreston Laboratories, Turnpike Lane, London, N.8. C 5884

ALPINE SUNGLASSES invite applications from established agents desirous to handle the following exclusive lines, 1. Graduated night-driving shields and spectacles, 2. Graduated sunshields, 3, 35 m/m camera. Important areas available, Existing accounts given. Travelling cases provided, 10 per cent, commission. Alpine Factories, Ltd., 22 Wardour St., London, W.1. C 4264 LONG-ESTABLISHED Midland firm require agents with good connections among chemists and druggists. Any Counties except South Wales, West and Central Midlands, and Bristol Area. This agency would make an excellent sideline. Worth about £12 per county per month with great possibilities of increase, Commission only. Box C 4188.

AGENCIES WANTED

8/6 for 36 words (min.) then 3d. per word. Box 2/-

AGENT calling on chemists Kent, Surrey, Sus-

AGENT calling on chemists Kent, Surrey, Sussex; requires additional agency. Repcat selling line. Three-monthly journey. First-class connection, Box C 4242. BEAUTY CULTURE EXPERT, fully trained, proceeding to Middle East in employment of established exporter, wishes to contact manufacturers desirous of selling their products in that area, Box C 4241.

VETERINARY SALES MANAGER

required by important company. Some knowledge of animal therapeutics is required together with the personality and ability necessary to run an established and expanding Sales Department. Applications in confidence to Box C 5896.

REPRESENTATIVE of leading wholesale and retail chemists in Hong Kong will be in London for two weeks commencing September 1 and will be available for interviews with manufacturers who wish to establish connections in Hong Kong. Please communicate with A. S. Watson & Co., Ltd., 64 Crutched Friars, E.C.3. Tel.: Royal 3616.

BUSINESS OPPORTUNITIES

17/6 for 36 words (min.) then 4d. per word Box 2/-

MANUFACTURING CHEMISTS invite inquiries for the manufacture, packing, etc., of private formulæ preparations, liquids, powders, tablets. Disparch facilities available with own printing department. Frank Macowal & Yanatas, Ltd., Willshaw St., London, S.E.14. Tel.: Tideway 3846-8. C 122 MANUFACTURING CHEMISTS invite inquiries for the manufacture, packing, despatch, etc., of liquid and cream preparations. Box C 164. MANUFACTURING CHEMISTS invite in-

WANTED

17/6 for 36 words (min.) then 4d. per word. Box 2/-

ALL KINDS OF BOTTLES, JARS, SCREW CAPS, cartons, packaging materials and manufacturers' stocks of all kinds bought at fair prices for spot cash. We are buyers of merchandise of EVERY DESCRIPTION, Clearance Stocks, Discontinued Lines, Surplus and Redundant Stocks, Should you have anything for disposal, please send us samples and particulars. Reliance Trading Co., 13 New College Parade, Finchley Road, N.W.3.

C 153 ALL KINDS OF BOTTLES, JARS, SCREW

BOTTLES, JARS AND CLOSURES purchased BOTTLES, JARS AND CLOSURES purchased for cash; we take this opportunity of advising you that we are open to purchase all stocks of medical bottles, screw caps, gummed tapes and other packaging materials. For top prices communicate, with samples, to Noel Davold & Co., 9 Laurence Pountney Lane, Cannon St., E.C.4. Man. 3915-2. C162 SECOND-HAND PLANT WANTED: Ampoule machine complete; 80 qt. dough mixer (Hobart type); Homogeniser; 5 in. paste mill (Premier or Moritz) motorised. Single phase, 250 volt. Apply to Biorex Laboratories, Ltd., 47-51 Exmouth St., E.C.I., or phone Terminus 5216. C5903 WANTED; Surplus or redundant merchandise.

5216. C 5903
WANTED: Surplus or redundant merchandise, clearance goods of any description or discontinued lines. Cash immediately, no delay. Our representative will be pleased to call or, alternatively, please send samples with particulars, quantity and price. Lawrence Edwards & Co., Ltd., 6-7 Wellington Close, Ledbury Rd., London, W.11. Telephone Bayswater 4020. C 140

TENDERS

WINDSOR GROUP HOSPITAL
MANAGEMENT COMMITTEE
TENDER FOR DRUGS
The Management Committee invites Tenders
from Manufacturing Chemists to supply certain drugs for 12 months from November 1,
1953, to October 31, 1954, to hospitals under
the control of the Committee. Forms of Tender giving full details of delivery points, items
and amounts required may be obtained from
the Supplies Officer at the undermentioned
address.

address.
Tenders, sealed and endorsed "Tender for Drugs" but bearing no name or mark indicating the sender must reach the undersigned not later than September 26, 1953.
The Committee do not bind themselves to accept the lowest or any tender.

GEORGE WESTON,

Group Secretary.
Windsor Group Hospital Management Committee, Kipling Memorial Buildings,

Alma Road, Windsor, Berks, C 5900

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VACANT POSSESSION ON COMPLETION TO be sold BY AUCTION by MESSRS. WILLIAM H. BROWN & SON, Chartered Auctioneers and Estate Agents, at their ESTATE SALE ROOM, NORTHGATE HOUSE, SLEAFORD, on MONDAY, SEPTEMBER 21, 1953, at 6 p.m.

Further particulars and permission to view can be obtained from Miss Harpham, upon the premises (Tel. 48), or from the Auctioneers, Northgate House, Sleaford (Tels: 447/8).

B. NORMAN & SON, 2-5 Little Britain (close G.P.O. and St. Pauls Tube Station), London, E.C., will auction on Wednesday, September 9, at 2 p.m., Chemists' shop equipment (almost new), drug runs, showcases, counters, display fittings, etc. View day prior, Catalogues (3d.) on application. on application.

WEEKLY

A = Advanced; R = Reduced; I.R.P = Inclusive Retail Price; * = Tax 25 pcr cent.; † = Tax 75 per cent.

ABBOTT LABO August 31)	ORATORII	ES, LTD. Each LR		m	E. R. SQUIBB & SONS (from August 31) Ambistryn and ADVANCE INDUSTRIES, LTD. Dispcl wick vase*		9
Abbocillin 800M Claims for reba		4 8 7 16 0 24	0	R	streptomycin sulphate 1-gm. 5-gm. 13 9 R DALMAS, LTD. 5-gm. 13 9 R Petronet with chlorophyll tin of 30 pieces 45 0 5	5	,
pany within fourte	een days.				P.A.T.A. PROTECTED LIST		-
ALLEN & HAN	BURYS, I	LTD. (from	Augi	ıst	BEECHAM (NORTHERN), LTD. EVANS MEDICAL SUPPLIES, LTD.	. (from
31)		Doz.			September 1)		
Guanimycin	4-fl oz.		7 1	P		3	,
Sulpenin	10		3			3 6	
Sulpenin	10	Each	3	Λ.	36 9 A 3 10 R box of 5 vials 10 10 16 16 8 A 1 9 R	0	3
	100	65 6			43 0 A 4 6 R HALEX, LTD.		
Penicillin oral tab		00 0				2	6
100,900 units	10	3 3 4	10⅓	R	from purchase tax from September 1.	-	U
100,500 units	100	27 0	101	-	LABORATORY NATIVELLE, LTD.		
200,000 units	10		7 §	R		1 1	11
	100	32 10	_		Pyorex medicated	•	
Procaine penicilling	n				tooth-paste ⁹ 20 8 2 10 MACLEANS, LTD.		
oily injection	3-mega	6 11 10	41	R			
BOVRIL, LTD, (from September 1)					C. d. G. REARSEET, ETD. (CONTECTED HOLE)	3	6
Boyril	1-oz.		2	A		1	
DOTTI	2-oz.		11		MOORE MEDICINAL PRODUCTS, LTD,	•	
	4-oz.	. 3	6	A	Bon-Accord glass inhaler 84 0 10 0 R RECKITT & COLMAN, LTD.		
	8-oz.	. 6	3		Nulon hand cream?	1	7
	16-oz.	- 11	6				6
Invalid Boyril	2-04.	2	6	A			
	4-oz.	4	6	A	AND PACKS SWAN MILL PAPER CO., LTD.		
	8-oz.	8	3	A	ADDIS, LTD. Softex chlorophyll-treated		
	16-oz.	15	0	A		1	0

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